STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 7508

Petition of Georgia Mountain Community Wind, LLC for a Certificate of Public Good, pursuant to 30 V.S.A. § 248, authorizing the construction and operation of a 5-turbine, 12 MW wind generation facility, with associated electric and interconnection facilities, on Georgia Mountain in the Towns of Milton and Georgia, Vermont, to be known as the "Georgia Mountain Community Wind Project"	))))))))	Technical Hearings held at Montpelier, Vermont February 4-5 and 8-10, 2010

Order entered: 6/11/2010

PRESENT: James Volz, Chairman
David C. Coen, Board Member
John D. Burke, Board Member

APPEARANCES: *(See Attachment A)*

FINDINGS AND ORDER

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I. INTRODUCTION

In this Order, the Vermont Public Service Board ("Board") grants, with conditions, Georgia Mountain Community Wind, LLC's ("GMCW") request for authorization, under 30 V.S.A. § 248, to construct and operate a 7.5 to 12 MW wind generation facility (the "Project"). The proposed Project consists of three to five wind turbines and associated transmission and interconnection facilities. The turbines, each of which is expected to be over 400 feet tall, would be sited on Georgia Mountain in the Towns of Milton and Georgia, Vermont.

As we have noted in previous Orders, wind generation facilities provide a benefit to Vermont by providing renewable generation (a state policy goal),[1] a potentially stably priced power resource, and increased jobs and tax revenues. At the same time, wind generation facilities located on ridgelines present significant environmental and aesthetic impacts. In this Order we impose several conditions to mitigate such impacts. These conditions include the requirement that noise from the turbines not exceed specific standards, monitoring requirements to ensure that the Project does not adversely impact wildlife species, requiring an easement to protect the natural communities on Georgia Mountain, and setback requirements.[2] Also in this Order, we require GMCW to enter into a long-term stably priced power purchase agreement(s) with a Vermont utility or utilities for a substantial portion of the Project's output.

The Chittenden County area has presented a challenge to Vermont power planners due to load constraints in this region.[3] In addition to providing new renewable power, the Project provides generation in an area of the state that has not constructed a generation unit of any significant size since the McNeil Power Plant was approved in 1981. The Project will be visible to a greater number of people than other wind generation facilities approved by this Board. However, we note that the visual impacts associated with the Project are borne, at least in part, by an area more proximate to a load center of Vermont.

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1. *See* 30 V.S.A. § 8001 *et. seq.*

2. The proposed Project would be sited directly adjacent to an adjoining property owner's boundary line; the Board will hold additional proceedings to determine an appropriate set-back from the property boundaries.

3. *See Petition of Vermont Electric Power Company, Inc. to construct the Northwest Reliability Project,* Docket 6860, Order of 1/28/05 at 19-27.

Pursuant to Section 248, we must determine whether the Project promotes the general good of the state. After reviewing the evidence and arguments, we have determined that, with the conditions included in this Order, the Project satisfies the applicable statutory requirements, the benefits of the Project are greater than its adverse impacts, and the Project will promote the general good of the state.

II. PROCEDURAL HISTORY

On January 30, 2009, GMCW sent advance notice to the Towns of Milton and Georgia and to the Chittenden County and Northwest Vermont Regional Planning Commissions, pursuant to 30 V.S.A. § 248(f), of its intention to file a petition, pursuant to 30 V.S.A. § 248, requesting approval of a three- to five-turbine wind electrical generation project with a capacity between 7.5 and 12 MW to be located on Georgia Mountain in the Towns of Milton and Georgia, Vermont. Copies of the notice were also provided to all towns within a ten-mile radius.

On March 26, 2009, GMCW filed with the Board a petition for a certificate of public good ("Petition"), pursuant to 30 V.S.A. § 248 and Board Rule 5.400, requesting approval to construct and operate the five-turbine, 12 MW Project[4] and associated transmission and interconnection facilities. The Petition and supporting materials were served on statutory parties pursuant to 30 V.S.A. § 248(a)(4)(c) and a copy was sent to all towns within a ten-mile radius.

On April 6, 2009, the Board sent notice of the petition and of the prehearing conference to all entities specified in 30 V.S.A. § 248(a)(4)(c), all towns within a ten-mile radius, and other interested parties. The Board convened a prehearing conference on April 23, 2009, to establish a schedule for this Docket, identify potential parties, and explore preliminary issues.

On May 4, 2009, notice of the Petition and a copy of the prehearing conference memorandum were sent to all adjoining landowners.[5] The notice stated that a public hearing would be held on June 9, 2009. A similar notice of the filing was published in *The Burlington Free Press* and *The St. Albans Messenger* on May 19, 2009, and May 26, 2009.

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4. Although GMCW has not selected the number and size of turbines to be constructed at the Project site, pursuant to Section 248(o), the petition assumes, for purposes of reviewing the project, the maximum number and capacity of the turbines that can be constructed at the Project site.

5. These adjoining landowners are listed in Attachment B.

On May 5, July 2, and July 17, 2009, the Board issued orders granting permissive intervention to interested parties. Permissive intervention was granted to: the Town of Georgia ("Georgia"); the Town of Milton ("Milton"); the City of Burlington Electric Department ("BED"); and the Northwest Regional Planning Commission ("NRPC"). In addition, the Board granted permissive intervention to Daniel and Tina Fitzgerald, Kenneth and Virginia Mongeon, Kevin and Cindy Cook, George A. and Kenneth N. Wimble, Scott and Melodie McLane, Matthew and Kimberly Parisi, and Jane and Heidi FitzGerald[6] (collectively "Landowner Intervenors").

On June 9, 2009, the Board held a public hearing in this matter. The hearing was held in Georgia, Vermont, and attended by approximately 150 members of the public. Forty-one people spoke at the public hearing.

On July 30, 2009, the Board conducted a site visit.

On September 10, 2009, the Milton Selectboard filed a letter requesting that an additional public hearing be held in Milton.

On November 30, 2009, the Board held a second public hearing in this matter. The second public hearing was held in Milton, Vermont, and attended by approximately 100 members of the public, approximately twenty-seven of whom spoke.

On January 14, 2010, Board staff conducted a second site visit to view the proposed turbine locations and additional locations not visited during the first site visit.

On February 4-5 and 8-10, 2010, the Board conducted technical hearings at the Board Hearing Room in Montpelier, Vermont.

On March 19, 2010, the Board issued an Order addressing the following issues. First, we ruled that Section 248(o) did not remove the requirement that the Board make positive findings on each of the substantive criteria of Section 248(b). Second, we admitted late-filed testimony of GMCW addressing system stability and reliability. Finally, we denied GMCW's request to commence construction prior to completion of the final system impact study.

Parties filed initial briefs on March 15, 2010, and reply briefs by March 31, 2010.

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6. Heidi FitzGerald was granted permissive intervention on the first day of the technical hearings, February 4, 2010.

III. PROCEDURAL ISSUES REQUIRING RESOLUTION

Motion to Strike Portions of ANR's Reply Brief

On April 7, 2010, GMCW filed a letter asserting that, in ANR's reply brief, "ANR leveled serious and unsupported allegations of misrepresentations by the Petitioner to this Board regarding the Project's alleged clearing and fragmentation impacts." GMCW requests that the Board strike the following claims by ANR:

> Petitioner misrepresents the current conditions on Georgia Mountain and has provided confusing and conflicting information to its consultants, the Board, and the parties regarding the extent of the forest clearing necessitated by this Project.
>
> Petitioner takes great pains to misrepresent the current conditions on Georgia Mountain in an attempt to minimize the potential impacts of the project. Petitioner characterizes the forest habitat on Georgia Mountain as fragmented and not contiguous.

On April 12, 2010, the Landowner Intervenors filed a letter supporting ANR's contention that GMCW misrepresented certain facts related to the Project's clearing limits and impacts as well as the state of fragmentation on and around Georgia Mountain. The Landowner Intervenors recommend that the Board deny GMCW's request to strike portions of ANR's reply brief.

On April 23, 2010, ANR filed a letter responding to GMCW's April 7 letter. ANR contends that GMCW's request fails to conform to Board Rule 2.206 and "requests a remedy which is not available for arguments contained in a Reply Brief." ANR further states that GMCW's brief did not provide an accurate representation of the extent of clearing associated with the Project or the condition of Georgia Mountain. ANR states that its counsel, as well as GMCW's counsel, are each "attempting to vigorously represent the interests of their client." ANR further states that it "disagrees with Petitioner's representation of the facts regarding the conditions on Georgia Mountain and properly alerted the Board of this." ANR also asserts that the term "misrepresent" is neither prejudicial nor inaccurate, as the term misrepresent means "to give a misleading or an incorrect representation of."[7]

We conclude that GMCW has not provided any basis for striking portions of ANR's reply brief. GMCW and ANR have put forth different conclusions in evidence and briefs regarding

7. ANR reply memorandum of April 23, 2010, at 4, citing Webster's II at 758 (1984).

the extent of clearing required for the Project and the current condition of Georgia Mountain and each party has made an argument as to how the Board should evaluate the evidence provided in this case. Expressing disagreement with opposing parties is expected and ANR supported its claims with citations to the evidentiary record. For these reasons, we deny GMCW's motion to strike.

However, we also note that ANR's decision to use the term "misrepresentation," with the significant negative connotations that such a term entails, created a situation where counsel for GMCW decided that a response was necessary. The use of less inflammatory terms would likely have obviated the time and effort that parties and this Board have expended on this issue.

Construction of the Project Prior to Completion of the System Impact Study

In our March 19, 2010, Order we rejected GMCW's request that it be allowed to commence construction prior to completion of the final system impact study ("SIS"). In that Order we stated:

> If the Board allowed construction of the project prior to receiving the results of the SIS, it is possible that the project might be modified or even abandoned as a result of the SIS, but the potentially significant environmental impacts that would result from construction of the project would have already occurred. Accordingly, we deny GMCW's request.[8]

In its reply brief, GMCW reiterates its request that the Board allow GMCW to begin construction prior to completion of a final SIS. GMCW contends that the risks associated with proceeding with construction are borne entirely by GMCW and also states that such risks are present if the CPG is rejected after a successful appeal to the Supreme Court. Finally, GMCW asserts that "it is unlikely a final SIS will reveal any substantial upgrades that were not identified in the Feasibility Study that would require substantial changes to the Project."

GMCW is correct that the economic risks associated with constructing the Project prior to the final SIS are borne by the petitioner. However, our March 19 Order made clear that a significant concern is the "potentially significant environmental impacts that would result from construction of the project." GMCW is also correct that, absent a stay, GMCW could commence construction after receipt and review of the SIS, but while an appeal is pending before the Court.

8. Docket 7508, Order of 3/19/10 at 5.

However, if an appeal is pending, the question of whether to issue a stay would be a matter for the Court to decide.

GMCW has not made a persuasive argument for changing our March 19 decision. Accordingly, GMCW cannot commence construction until after the SIS has been completed, parties and the interconnecting utility[9] have had the opportunity to review and comment upon the SIS, and the Board has determined that there are no further issues with respect to the Project's impact on the transmission system.

IV. COMMENTS OF THE PUBLIC

The Board has provided opportunities for public comments in this Docket through two public hearings and the submission of written communications. We convened a public hearing on June 9, 2009, in Georgia. Notice of the public hearing was published in *The Burlington Free Press* and *The St. Albans Messenger*. Of the approximately 150 people who attended the public hearing, 41 people spoke. We convened a second public hearing on November 10, 2009, in Milton. Notice of the public hearing was published in *The Burlington Free Press*, *The St. Albans Messenger*, and *The Milton Independent*. Of the approximately 100 people who attended the public hearing, 27 people spoke. Additionally, the Board received dozens of written comments via post and e-mail.

Vermont law requires the Board to base its decision on the evidence presented by the parties during the evidentiary hearings. Even though we cannot rely upon them as evidence, public comments provided a crucial role in offering fresh perspectives and bringing up new issues that the Board should take under consideration. In particular, they assisted us in formulating questions that we were then able to pose to the parties and witnesses during the technical hearings. The Board reviewed all the comments made at the public hearing and in writing and sincerely appreciates all the concerns expressed by interested individuals. While we are unable to address each individual concern, we provide a summary of the primary issues raised by the comments below.

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9. The Board's March 19, 2010, Order in this Docket stated: "We note that CVPS is not a party to this Docket. Given that the proposed project would interconnect with CVPS's system, if a CPG is issued for the project, we will require Petitioner to provide CVPS with a copy of the SIS and we will accept comments from CVPS on the SIS." Order of 3/19/10 at 5.

Numerous comments focused on the aesthetic impacts of the Project on the adjacent areas. Many area residents expressed concerns regarding the Project's potentially negative impacts on the beauty of Georgia Mountain. Several commenters asserted that the potential aesthetic impacts would have a negative impact on Vermont tourism. One business owner, however, suggested that the Project might add a point of interest for tourists. Multiple landowners within the Project's viewshed expressed concern that the Project's aesthetic impacts would diminish their property values. However, several area residents stated that they would either not mind, or would enjoy, seeing the Project's turbines on Georgia Mountain.

Numerous comments also focused on the noise generated by the Project's turbines during operation. Nearby residents expressed concerns regarding the potentially negative impacts of noise on human health, animal health, and the quiet enjoyment of their properties.

Many commenters voiced concerns about the Project's potentially negative impact on wildlife including the possibility of turbine collision for flying species, habitat loss, and a general disruption of the local environment.

Several area residents stated that water pollution from Project activities could impact the community. Residents with homes near the Project spoke about the potential negative effects related to rock blasting associated with the Project's construction. Neighboring residents' concerns about blasting included its potential negative impacts on water supplies, such as wells and feeder brooks, from erosion, water diversion, and runoff. One landowner mentioned concerns about water contamination from potential oil spillage from the oil in the turbines.

Residents of Ted Road expressed concerns about the proposed use of Ted Road as the Project's access point, citing ongoing maintenance issues related to other commercial users of the private road and stated that only the six private homes on the road were paying for the costs of repairs. In addition, residents of Ted Road highlighted concerns about the potentially negative impacts the Project could have on the wetland that runs adjacent to the road.

Some commenters stated that possible light pollution, ice throw, and shadow flicker could have a detrimental impact on the community. The commenters were concerned about the operation of blinking lights on the turbines at night, the potential of ice falling from the turbine's rotor blades, and the shadow flicker created by the turbine rotor blades during operation.

One commenter also voiced a concern about the safety of hot air balloonists that have been seen flying near the proposed Project area.

Some commenters also highlighted the need for a decommissioning plan and a developer-funded decommissioning fund that would help restore the Project area after operations cease. Some commenters also stated their concern that the proposed Project violated the Town of Georgia's and Town of Milton's zoning ordinances. Commenters asserted that the proposed Project would be within Milton's Forestry/Conservation/Scenic Ridgeline District and Georgia's Recreation District.

Some adjacent landowners voiced concerns about the proximity of the turbine towers to neighboring property lines, in particular citing the risk associated with a turbine collapse.

One written comment asserted that conditions should be added to require bonds to cover decommissioning costs and costs associated with potential property value losses, negative health effects, and negative environmental effects. The commenter also argued for a condition requiring the developer to fully disclose all tax and grant benefits bestowed on the Project and requiring the Project to have power-storage capability.

In addition, we received comments from the Vermont All-Terrain Vehicles Sportsman's Association, Inc. ("VASA") and a local 4-H Club explaining the local 4-H Club's current recreational horseback riding use of the Project property and VASA's current recreational all-terrain-vehicle use of the Project property and expressing the desire of these organizations to continue recreational horseback and all-terrain vehicle use of the Project property in the future.

The Board received a large number of comments about the Project's renewable energy potential. Regardless of the commenters' views regarding this Project, the vast majority of commenters supported developing in-state renewable energy.

Some commenters asserted that the Project would either contribute a very small portion of generation to serve Vermont's load or, at worst, have a negative energy impact on Vermont's total energy output. Commenters raised energy-output concerns, including concerns about the quality of the wind at the Project site, the intermittent nature of wind power, and the inability to store the intermittent power. Commenters suggested that alternative renewable resources, such as solar or hydroelectric, could provide greater benefits than the Project. Commenters also expressed a concern that the Project would result in higher power rates without contributing

significant renewable power. These commenters also expressed the opinion that the Project would benefit the developers, but not the ratepayers, because the developers would receive government subsidies. Thus, commenters in opposition to the Project argued that the potential negative impacts discussed above (e.g., environmental, aesthetic, and human health) would outweigh the Project's ability to positively contribute to Vermont's economy and energy needs and the commenters argued that the Project would not result in an overall benefit to Vermont.

Some commenters asserted that the Project would help diversify Vermont's energy portfolio, address concerns about climate change, reduce dependence on fossil fuels, increase security, and offset the potential loss of the Vermont Yankee Nuclear Power Station's electrical generation. We received many comments that stressed the need for local, clean, and renewable energy and praised the Harrison family for developing the proposed Project. Commenters asserted that the Project would reduce transmission costs and that the Project was appropriately located near load. Thus, commenters in support of the Project argued that the environmental and economic benefits of renewable power, such as wind, outweigh the impacts of the Project.

Throughout this Order, the Board addresses the concerns raised during these proceedings, including those expressed in the public comments.

V. PROJECT DESCRIPTION

1. Georgia Mountain Community Wind, LLC, is a Vermont limited liability company owned and operated by James Harrison and his family, with a principal address at Harrison Concrete, P.O. Box 2098, Georgia, VT 05468-2098. Harrison pf. at 1; tr. 2/4/10 at 16 (Harrison).

2. The Project involves the construction and operation of a three- to five-turbine wind generation facility, with an installed capacity between 7.5 and 12 MW, along a 3/4 mile section of ridgeline on Georgia Mountain in the Towns of Milton and Georgia in Chittenden County, Vermont. Harrison pf. at 3; tr. 2/4/10 at 26-27 (Harrison); Zimmerman pf. at 7; exhs. Petitioner-JH-1 at 2 and Petitioner-DR-2 at 3.

3. The Project will be located on private land owned by the Harrison family and Green Crow, LLC, a forest-products company. Exh. Petitioner-JH-1 at 1.

4. The Project is bordered to the west by Jane Fitzgerald's property. The Project proposes siting three turbines as close as one rotor radius length (approximately 150 feet) from the base of the turbines to the adjoining Fitzgerald property line, such that the rotor tip could reach the property boundary. Tr. 2/4/10 at 51-52 (Zimmerman); Jane Fitzgerald pf. at 1-2; exhs. Petitioner-PC-2, 8-12.

5. Georgia Mountain lies about six miles east of the shore of Lake Champlain and is one of several rolling hill landforms in the northern Champlain Valley. Near its western base is Arrowhead Lake, the site of an existing dam and hydroelectric generation station, lying to the north is the Lamoille River Valley, and lying to the east are rolling hills and eventually agricultural land. Westford Road runs east-west at the southern base of Georgia Mountain. Zimmerman pf. at 5-6.

6. Georgia Mountain's ridgeline is approximately 3/4 mile long and between 1,320 and 1,440 feet above mean sea level. Zimmerman pf. at 5.

7. Georgia Mountain is currently the site of two towers: one 120-foot-tall telecommunications tower and its associated structures, located at the southern end of the ridgeline; and one temporary 132-foot-tall meteorological tower installed in 2006 for the Project. Exhs. Petitioner-JH-1 at 2 and Petitioner-DR-2 at 21-25; Zimmerman pf. at 5; Harrison pf. at 2-3.

8. Georgia Mountain is largely composed of a contiguous forest cover. However, the terrain also includes logging activities, snowmobile trails, all-terrain vehicle trails, and a 4-wheel-drive service road and electrical distribution line, extending from Westford Road to the telecommunications tower and associated structures. Exhs. Petitioner-DR-2 at 21-25 and Petitioner-JH-1 at 2-3; tr. 2/10/10 at 98 and 145 (Lew-Smith); Zimmerman pf. at 5-6; tr. 2/10/10 at 172 (Sorenson).

Project Elements

9. GMCW has not selected a specific turbine model, but the Project will utilize three-bladed, horizontal axis, upwind wind turbines. Each wind turbine will be painted an off-white color and will be comprised of three components: a columnar tower, a nacelle, and three rotor

blades. The turbines will be between 230-328 feet high at the nacelle and 353 to 443 feet high at the tip of the blades. Exhs. Petitioner-JH-1 at 2, Petitioner-DR-2 at 3-4, and DPS-Vissering at 6.

10. The largest turbines under consideration are the Vestas 3.0 MW and the GE 2.5 MW turbines. The tallest turbine, the GE turbine, is 443 feet high at the tip of the blades and would limit the Project to four turbines, given the available windy land area at the Project site. Zimmerman reb. pf. at 3-4.

11. The Project would have a maximum decibel level of 40 dB at the nearest residence over a ten-hour period beginning at 7:00 p.m. Zimmerman reb. pf. at 4; *see* Findings 164-174, below (Noise findings).

12. GMCW will install lighting on the turbines and meteorological tower in accordance with the Federal Aviation Administration recommendations. GMCW anticipates that three of five turbines in a five-turbine array will be equipped with a single red synchronized light, located on the nacelles, that slowly pulses on and off. Exhs. Petitioner-DR-2 at 4-5 and DPS-Vissering at 6.

13. GMCW also plans to construct a maintenance/control building near where the proposed new section of road meets an existing road leading to the communications tower. Exhs. Petitioner-JH-1 at 3 and DPS-Vissering at 6-7.

14. GMCW will select either dry or mineral-oil transformers depending on the type of turbine used for the Project. If mineral-oil transformers are utilized, GMCW will install oil containment and the site maintenance plan will include routine inspections. Zimmerman pf. at 8.

Interconnection

15. A new 34.5 kV electric collection line will carry power from the transformers at the wind turbines to an existing CVPS 34.5 kV sub-transmission line at the Husky Injection Molding facility along Milton town highway (TH-5) North Road. Exhs. Petitioner-JH-1 at 3 and DPS-Vissering at 6; Zimmerman pf. at 9.

16. The collector lines from the wind turbines to the public road will be entirely on Harrison-owned land. The collector lines will be buried along the summit and then run from the summit to North Road on a 34.5 kV overhead line south and west for approximately 250 to 300

feet. The collector line will then run along North Road for 1450 feet to connect with the existing sub-transmission line. Exhs. Petitioner-JH-1 at 3 and DPS-Vissering at 6; Zimmerman pf. at 9.

17. The Project's installed power poles are anticipated to be approximately thirty-four to forty feet tall above ground. Exhs. Petitioner-JH-1 at 3 and DPS-Vissering at 6.

18. The cleared right-of-way for the 34.5 kV collector line will be 50 feet in width. Tr. 2/10/10 at 53 (Cross); exhs. Petitioner-JH-1 at 3 and DPS-Vissering at 6.

19. GMCW projects that the annual net energy production of the Project will average 21,000 MWh, or a net capacity factor of between 28% and 34%. This is enough power to serve the energy demands of over 3,500 homes. Exh. Petitioner-JH-1 at 4; Zimmerman pf. at 11-12; tr. 2/10/10 at 253-54 (Zimmerman).

Construction and Roads

20. GMCW plans to clear approximately forty-five acres during construction. Tr. 2/10/10 at 52-53 (Cross).

21. Construction will last approximately eighteen weeks with access road construction lasting approximately ten weeks. Expected hours of construction are from 7:00 AM to 5:00 PM Monday through Saturday. Construction is not expected to occur on Sundays or Federal and State holidays. Cross pf. at 7 and 10.

22. During construction, GMCW might utilize the Harrison family's land on VT Route 104 as a temporary laydown area for storing large pieces of equipment until needed at the Project site. Cross pf. at 8.

23. GMCW and the chosen turbine supplier will develop a Transportation Plan in coordination with the Vermont Agency of Transportation ("VTrans"). The Transportation Plan will incorporate provisions for emergency vehicle passage. The chosen turbine supplier will develop specific transportation plans, including a schedule for shipment of oversized loads, with Milton officials. Exh. Petitioner-JH-1 at 3; Cross pf. at 4-6 and 8.

24. GMCW, along with the chosen turbine supplier, will obtain all required highway crossing permits and oversized and overweight vehicle permits. GMCW will also employ the service of sheriffs or other trained traffic-control personnel to manage traffic flow, as necessary, during delivery of large Project equipment and components. GMCW will transport all

construction materials over state highways and Milton town roads to the Project road in accordance with state and local regulations. Cross pf. at 8; exh. Petitioner-JH-1 at 3.

25. Depending on the types of turbines selected, and in accordance with the approved Transportation Plan, GMCW will transport the Project components using either Interstate 89 or Route 7. The Project will then utilize Westford Road and Ted Road to access the Project site. The Project will not utilize North Road for access to the Project site. Cross pf. at 4-6 and 9; tr. 2/10/10 at 230 (Harrison).

26. The Harrison family owns Ted Road and will maintain the integrity of that road during the construction and operation of the Project. Tr. 2/10/10 at 223-24 (Harrison).

27. Ted Road will require improvements to negotiate the oversized equipment. However, Ted Road will not be widened adjacent to Class II Wetland #36 and any improvements related to the Project will not impact the wetlands area and do not require a Conditional Use Determination ("CUD"). Cross pf. at 5; *see also* Findings 119 and 124, below.

28. The Project site includes an existing access road to the communications and meteorological towers located on the south side of the ridge. This existing road will provide access via Ted Road. Exhs. Petitioner-JH-1 at 2-3, Petitioner-DR-2 at 4, and DPS-Vissering at 6.

29. A total of 2.2 miles of upgraded and new roadway will be required for access to the turbines. The clearing required to build the access roads, ditches, and side slopes will need to be at least 75 feet in width, with the clearing limits extended to 150 feet or more in some areas.[10] Tr. 2/4/10 at 94-95 (Cross); tr. 2/10/10 at 50-51 (Cross).

30. After construction is completed, the thirty-five-foot to 150-foot clearing for the roads will be reclaimed, where possible, to seventeen feet for a permanent access road, and thirty-five feet for summit roads. The stormwater features will remain throughout the Project's life, requiring some clearing limits to remain at 150 feet throughout the life of the Project. Exhs. Petitioner-JH-1 at 2-3 and DPS-Vissering at 6; tr. 2/4/10 at 93-94 (Cross); tr. 2/10/10 at 51 (Cross).

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10. Prior to the commencement of construction, GMCW will be required to file, for Board approval, final design plans depicting exact clearing limits.

31. The Project's access includes roads to the turbine sites at an 18% grade. The access road grade will not exceed manufacturers' limitations for safe transportation of turbine components to the Project site. The access road near the turbines will not exceed the 14% grade recommended by the crane crawler manufacturers. The majority of the access route will not exceed a 12% grade. Tr. 2/4/10 at 70-73, 104 and 107-109 (Cross).

32. During the eighteen weeks of construction, the Project will generate approximately 2,120 vehicular round trips total. The number of trips during construction will vary from zero to thirty vehicular round trips per day. During operations, the Project will generate approximately one or two car trips per week. Cross pf. at 7-8.

Project Construction

33. GMCW plans to employ thirty-five temporary development and construction workers and one to two permanent staff people to operate and maintain the facility. Foley pf. at 5; tr. 2/5/10 at 18-19 (Heaps); exh. Petitioner-RWH-2 at 9-10.

34. GMCW will construct security gates on the access road, which will be locked when the site is unattended. Security gates will be constructed on the north side and also where the all-terrain vehicle trails come up to the proposed easement land. Tr. 2/10/10 at 237 (Harrison); Zimmerman pf. at 36.

VI. SUBSTANTIVE CRITERIA OF SECTION 248(b)

Pursuant to statute, the Board is required to make positive findings related to criteria set out in 30 V.S.A. § 248(b) before we may issue a certificate of public good to a Project. Below, we address each of these criteria.

Orderly Development of the Region

[30 V.S.A. § 248(b)(1)]

Findings

35. The proposed Project will not unduly interfere with the orderly development of the region, with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and

the land conservation measures contained in the plan of any affected municipality. This finding is supported by Findings 36–45, below.

36. The Project will be located in the Towns of Milton and Georgia, Vermont. Milton is part of the Chittenden County Regional Planning area and Georgia is part of the Northwest Regional Planning area. Zimmerman pf. at 19.

37. Other municipalities within a ten-mile radius include Cambridge, Colchester, Essex, Fairfax, Fairfield, Fletcher, Grand Isle, St. Albans City, St. Albans Town, South Hero, Underhill, and Westford. Zimmerman pf. at 20; exh Petitioner-DR-2.

38. Petitioner met with the selectboards of the neighboring communities and with the Chittenden and Northwest regional planning commissions regarding the proposed Project. Zimmerman pf. at 21.

39. The Project reflects many of the expressed community goals to develop more renewable energy resources in the region to serve its electric needs. The Project is also consistent with the existing uses on Georgia Mountain, including active logging on portions of the mountain. For these reasons, the Project will not unduly interfere with the development of the region. Zimmerman pf. at 19-20.

40. The Milton Town Plan, adopted in 2008, contains a section describing land at the highest elevations and other environmentally sensitive areas as conservation areas. This section of the plan specifically delineates the Georgia Mountain area as one of these conservation areas. Exh. GMCW-Cross-Vissering-1 at 73.

41. The Milton Town Plan, under a section entitled "Energy Goals," includes objectives to encourage the development of renewable energy and specifically encouraging the implementation of wind and solar energy. The Plan states that renewable energy sources should be a part of the Town's energy policy, and facilitating such sources is a stated goal of the Plan. The plan also acknowledges the installation of meteorological towers on Georgia Mountain "to determine the feasibility of this parcel for electrical power generation from wind energy." Exh. GMCW-Cross-Vissering-1 at 30; Zimmerman pf. at 22.

42. The Georgia Town Plan, adopted in 2006, under the "Scenic Resources" section lists Georgia Mountain as a "noteworthy" land feature. This section also includes the goal of

encouraging the preservation of noteworthy scenic features. Exh. GMCW-Cross-Vissering-3 at 25-26.

43. The Georgia Town Plan, under the "Energy" section of the plan, includes goals of reducing dependence on fossil fuels and promoting the use of renewable energy sources, including wind. Exh. GMCW-Cross-Vissering-3 at 52-53.

44. The Chittenden County Regional Plan recognizes the scenic and aesthetic concerns regarding the siting of potential wind energy projects; however, it also states that wind power can enhance the state's energy independence, is relatively quiet, and has minimal impacts on air and water quality. Zimmerman pf. at 26.

45. The Northwest Regional Plan acknowledges that the siting of wind generation may interfere with scenic, natural and historical resources, while recognizing the benefits of wind energy as a viable alternative to traditional sources of power. Zimmerman pf. at 27.

Discussion

Section 248(b)(1) provides that, before the Board may issue a CPG for an in-state facility, the Board shall find that the facility:

> will not unduly interfere with the orderly development of the region with due consideration having been given to the recommendations of the municipal and regional planning commissions, the recommendations of the municipal legislative bodies, and the land conservation measures contained in the plan of any affected municipality.[11]

The Landowner Intervenors argue that the Project will interfere with the orderly development of the region. The Landowner Intervenors contend that the relevant town plans and zoning regulations contain clear language regarding the protection of scenic resources and that [a]lthough renewable energy is encouraged in the Town Plans, this is a general statement . . . and does not imply that other regulations and standards should be ignored in the process."[12]

The Petitioner argues that the Project will not unduly interfere with the orderly development of the Towns of Milton and Georgia or the surrounding towns in the region. The Petitioner contends that while 248(b)(1) does not mandate compliance with regional and town

11. Section 248(b)(1) contains additional provisions that only apply to natural gas transmission lines.

12. Landowner Intervenors Brief at 8.

plans, the Project, nonetheless, is consistent with these plans. The Petitioner argues that while the town plans of Milton and Georgia "contain provisions related to land conservation, none are sufficiently specific with respect to Georgia Mountain or announce a specific policy constituting a 'land conservation measure' with which the Project would be inconsistent."[13]

The Department also argues that the Project will not interfere with the orderly development of the region or affect the activities on the land surrounding the Project. The Department contends that the applicable town and regional plans do not contain the "specificity such that a Community Standard existed." Further, the Department argues that even if such a standard existed the Board need only give due consideration to the standard and that the standard would not be controlling of the Board's decision here.

We conclude that the proposed Project will not unduly interfere with the orderly development of the region, and thus complies with Section 248(b)(1). We also find that the Project will not negatively impact activities that currently take place on the lands surrounding the Project.

The town plans of Milton and Georgia encourage the protection of scenic views within the Town, but also encourage the development of renewable wind energy. Given that wind energy projects are in most cases located at high elevations, including ridgelines, to capture the wind resource, these provisions would appear to be inconsistent. However, we read these provisions as the town's attempt to ensure that any wind generation projects are sited in a way that minimizes the aesthetic and other impacts associated with these projects. We do not interpret these provisions as a prohibition against the development of wind energy projects on ridgelines. It is true that the Project will be visible in the host towns and surrounding area. However, as we conclude in our review of the aesthetic impact of the Project, the intrusion into the scenic landscape will from most vantage points be relatively minor and will not interfere with the orderly development of the neighboring towns or the region.

We also conclude that the Project is consistent with the land use, energy and natural resource objectives identified in the applicable regional plans. Both regional plans recognize the benefits of renewable energy in meeting some of the region's energy needs. The Plans also recognizes that there are potential impacts on scenic and other resources associated with wind

13. Petitioner Reply Brief at 9.

energy development. In this Order, we find that the Project will not have an undue adverse impact on aesthetics or natural resources. Therefore, we conclude that the Project will not unduly interfere with the orderly development of the region.

Need for Present and Future Demand for Service

[30 V.S.A. § 248(b)(2)]

Findings

46. The Project is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost-effective manner through energy conservation programs and measures and energy-efficiency and load management measures. This finding is supported by Findings 47 and 48, below.

47. There is a robust demand for new sources of renewable energy in Vermont and New England. Zimmerman pf. at 10; Foley pf. at 3.

48. The Sustainably Priced Energy Enterprise Development ("SPEED") program requires Vermont utilities to meet incremental energy growth between January 1, 2005, and January 1, 2012, with new renewable resources. A wind generation facility such as the GMCW Project qualifies under the SPEED program, if GMCW enters into a contract with a Vermont utility. Foley pf. at 4, 7.

Discussion

Section 248(b)(2) of Title 30 requires that the Board find that the proposed project:

> is required to meet the need for present and future demand for service which could not otherwise be provided in a more cost effective manner through energy conservation programs and measures and energy-efficiency and load management measures, including but not limited to those developed pursuant to the provisions of sections 209(d), 218c, and 218(b) of this title.

GMCW contends that the Project meets this criterion because it involves construction of a merchant plant that will help meet regional and Vermont needs for both energy and renewable power.

The proposed Project is not owned by a Vermont utility and will not provide retail service, but is rather a merchant plant offering power on the wholesale market. In several

Orders, the Board has addressed the applicability of the Need criterion to merchant power plants, concluding that:

> 'the general good of the state' standard includes a recognition of the value to Vermont of the benefits to the entire New England Power Pool, from which Vermont purchases much of its power and upon which Vermont depends for reliability.[14]

The Board found that, due to the regional nature of the power pool, a merchant project that addresses the regional need for power would comply with the statutory standard.[15] This standard recognized the fact that the developer of a merchant plant had no obligation to provide energy efficiency and load-management services.

As a renewable energy facility, the Project will contribute to meeting the regional and state needs for renewable power. The addition of the wind facility would also help the State meet the qualifying SPEED resource objectives under 30 V.S.A. §§ 8001-8005, provided that GMCW enters into a long-term stably priced contract with a Vermont utility for a substantial portion of the Project's output.

These factors lead us to conclude that the Project would contribute to both Vermont's and the region's need for power generally and renewable power specifically, needs that cannot be met through energy efficiency, conservation, or load-management measures.

System Stability and Reliability

[30 V.S.A. § 248(b)(3)]

Findings

49. The Project will not have an adverse impact on system stability and reliability, if all necessary upgrades to the interconnecting system identified by the system impact study ("SIS") are constructed. This finding is supported by Findings 50–56, below.

50. CVPS is the owner of the nearby existing 34.5 kV sub-transmission line to which GMCW plans to interconnect the Project. Zimmerman pf. at 18.

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14. Docket 6545, Order of 6/13/02 at 106; Docket 6812, Order of 3/15/04 at 21; Docket 7156, Order of 8/8/07 at 29.

15. Docket 6812, Order of 3/15/04 at 21–22.

51. CVPS conducted a feasibility study to assess voltage, thermal, and short-circuit impacts of interconnecting up to 12.2 MW of wind energy generation at the Project site. Zimmerman and Estey supp. reb. pf. at 1; exh. Petitioner-Supp-2.

52. The CVPS feasibility study concluded as follows:

> As proposed, the Georgia Mountain Wind Farm Generation project is feasible with respect to voltage, thermal, and short circuit constraints identified in this study. There were thermal constraints identified as a direct result of the project. However, since they can be mitigated via limited system upgrades, these constraints do not impact the system so severely that the project's feasibility is in doubt.

Exh. Petitioner-Supp-2.

53. The feasibility study likely captures most of the upgrades needed to reliably interconnect the Project, and the feasibility study addresses most of the relevant issues. However, the scope of the feasibility study does not include examination of stability issues and does not include the actual parameters of the final turbines to be installed. Tr. 2/10/10 at 292-293 (Jordan); exh. Petitioner-Supp-2.

54. A final SIS should be conducted after the turbines are selected and the operating characteristics of the selected turbines are known. Tr. 2/10/10 at 284, 290 (Jordan).

55. The SIS would contain recommendations for any necessary upgrades to the interconnecting system, including installation of any necessary protective equipment, that must be undertaken to ensure system stability and reliability. If all necessary upgrades identified in the SIS and in the feasibility study are implemented, the Project will not have an adverse impact on system stability and reliability. Tr. 2/10/10 at 286, 289 (Jordan).

56. GMCW will be responsible for the cost of upgrades needed to interconnect the Project with CVPS's transmission system. Zimmerman and Estey supp. reb. pf. at 3.

Discussion

The Feasibility Study addresses the minimum system upgrades that would be necessary to safely interconnect the Project with CVPS's system, but specifically states that it does not

address stability issues. Instead the Feasibility Study specifically contemplates the need for an SIS to address stability issues.[16]

In our Order of March 19, 2010, in this Docket, we determined that Section 248(o) does not obviate the requirement that the Board make positive findings under each of the criteria of Section 248(b), including Section 248(b)(3). However, pursuant to Section 248(o), a developer of a wind generation facility is not required to specify the exact make or dimensions of the turbine or rotors to be installed. The Department's witness has testified that, to fully understand the impact of the Project on system stability, the operating characteristics of the turbines should be known. Accordingly, we recognize that for wind generation facilities, some additional level of post-certification review may be appropriate, provided that there is sufficient evidence to demonstrate compliance with the criteria of Section 248(b). We further note that, absent the testimony of the Department's witness, there would have been insufficient information to make a positive finding on this criterion.

The Department's engineer has indicated that the construction of any necessary upgrades identified in the SIS will adequately address system stability and reliability. Accordingly, prior to construction GMCW shall submit to the Board, parties, and CVPS,[17] the final SIS for a determination by the Board regarding whether the SIS fully satisfies any remaining issues associated with system stability and reliability. Parties and CVPS shall have the opportunity to comment on the SIS and any required upgrades at that time. GMCW will be responsible for all costs of system upgrades or changes necessary to ensure that the Project does not cause adverse impacts to the transmission system. In addition, GMCW must obtain Board approval for any necessary upgrades identified in the SIS prior to construction of the Project, including any Section 248 CPGs that may be required for the upgrades.

16. Exh. Petitioners-Supp-2 at 18.

17. As noted previously, while CVPS is not a party to this Docket, the Project will interconnect with CVPS's system. Accordingly, it is appropriate to provide CVPS the opportunity to comment on the SIS.

Economic Benefit to the State

[30 V.S.A. § 248(b)(4)]

Findings

57. The proposed Project, with the conditions described below, will result in an economic benefit to the State and its residents. This finding is supported by Findings 58–66, below.

58. The Project will result in the creation of new jobs, increased tax revenue, and other direct and indirect benefits. Exh. Petitioner-RWH-2; Heaps pf. at 3; tr. 2/5/10 at 30 (Heaps).

59. The Project, with five turbines and based on 2008 prices, would cost approximately $21.4 million to develop and construct. Approximately one-third ($7.2 million for a five-turbine project) of the Project's expenditures will be spent in Vermont. Tr. 2/5/10 at 18 (Heaps); exh. Petitioner-RWH-2 at 3.

60. The Project is expected to create thirty-five temporary construction jobs and one to two long-term maintenance positions. Tr. 2/5/10 at 18-19 (Heaps); exh. Petitioner-RWH-2 at 9-10.

61. The Project will provide an increased source of property tax revenue; Vermont will receive a total of approximately $716,000 more tax revenue over the period of 2009 to 2020 with the Project than it would otherwise. Foley pf. at 5; exh. Petitioner-RWH-2 at 9-10.

62. The Lawrence Berkeley National Laboratory conducted a study that examined more than 7,000 home sales from ten wind turbine sites in the United States. The study found no evidence that a property near (within 1/4, 1/2, and 1 mile) a wind turbine project, or one that had a view of such a facility, had its value reduced because of the presence of the project. Exh. Petitioner-RWH-2 at 16.

63. The Project is not in a major tourism center in Vermont. The host towns of Milton and Georgia do not generate significant revenues from the lodging industry. Exh. Petitioner-RWH-2 at 14.

64. Currently, GMCW does not have an executed power purchase agreement for the sale of the Project's output. GMCW is discussing power sales arrangements with Vermont electric utilities. Zimmerman pf. at 18.

65. The Sustainably Priced Energy Enterprise Development ("SPEED") program encourages Vermont utilities to contract for power with in-state renewable resources. Such contracts do not necessarily have to be stably priced to derive the SPEED benefit, but without a

contract with Vermont utilities, the Project cannot contribute to the goals of the SPEED program as described by the Legislature. Foley pf. at 7.

66. The Project can have an economic benefit without a long-term stably priced contract. The Project would include other positive economic factors that are not attributed to increased employment and tax benefits to the host towns. These attributes include greenhouse gas emission offsets and the ability of the utilities to meet the statutorily mandated SPEED resource requirements. Tr. 2/5/10 at 71-72 (Foley).

Discussion

The Board, pursuant to 30 V.S.A. § 248(b)(4), must find that the Project "will result in an economic benefit to the state and its residents." Section 248 does not require us to quantify exactly how much economic benefit the State would receive from the Project but only determine that there will be some economic benefit.[18] GMCW has demonstrated that the Project will result in economic benefits in the form of tax revenues and job creation.[19]

In the course of this proceeding, the Landowner Intervenors expressed concerns related to the impact of the Project on their property values. Specifically, the Wimbles (adjoining landowners to the Project) assert that potential buyers of their property indicated that they would no longer be interested in purchasing the property if the Project were to be approved.[20] However, neither the Wimbles nor any other party presented empirical evidence that wind turbines will negatively impact property values. While we recognize that property values are a concern for neighboring landowners, we must examine the issue based on objective, empirical evidence. Although few studies on the impact of wind turbines on property values have been completed to date, the Lawrence Berkeley National Laboratory study described above found that wind projects have not negatively impacted property values.[21] Accordingly, we conclude that the

18. *In re Amended Petition of UPC Vermont Wind, LLC,* 2009 VT 19 at ¶¶ 5-11.

19. The Board recognizes that, if the conditions described in this Order require GMCW to construct fewer turbines, the economic benefits may not be as great as if the Project were constructed with five turbines. However, even with fewer turbines, there will still be an economic benefit associated with the Project.

20. Wimbles pf. at 4.

21. Exh. Petitioner-RWH-2 at 15.

Project is not likely to result in significant reductions in the property values of surrounding residences.

The Wimbles also raised concerns related to the economic impact of the Project on their dairy operation. The Wimbles often graze their dairy cattle on a meadow that is located approximately 0.19 miles from the Project site.[22] The Wimbles are concerned that noise from the Project, during construction and operation, will decrease their dairy cows' milk production.[23] The Wimbles also assert that stray voltage caused by the Project will be a danger to their dairy cattle.[24] The Wimbles did not present any evidence, and were not able to cite any studies, to support their claims. It is possible that the Wimbles' dairy operation may be affected by the construction and operation of the Project. However, during construction, the Wimbles will be able to take steps to minimize the effects on their cows because GMCW will be required to notify the surrounding landowners prior to blasting. In addition, we note that noise from construction activities will be of a limited duration. In this Order we impose noise standards that the Project cannot exceed at residences. While we recognize that the Wimbles' farm operations are closer to the Project than any residences, the Wimbles have not presented sufficient evidence that noise from Project operation will have an undue adverse impact on the Wimbles' farm operations.

For the reasons stated above, we conclude that the Project will provide an economic benefit to Vermont and its residents.

Aesthetics, Historic Sites, Air and Water Purity, the Natural Environment and Public Health and Safety

[30 V.S.A. § 248(b)(5)]

Pursuant to Section 248(b)(5), the Board is required to find, before we issue a CPG, that the Project

> will not have an undue adverse effect on esthetics, historic sites, air and water purity, the natural environment and the public health and safety, with due

22. Wimbles pf. at 3.

23. Tr. 2/5/10 at 26-30 (Wimbles) (stating that production might drop ten percent).

24. Wimbles pf. at 3.

> consideration having been given to the criteria specified in subsection 1424a(d) and subdivisions 6086(a)(1) through (8) and (9)(K) of Title 10.

In practice the Board typically makes findings on each of the Act 250 criteria specified, but also makes an overall finding as to whether the Project will have an undue adverse impact on aesthetics, historic sites, air and water purity, the natural environment, and public health and safety. Depending on the nature and scope of a project's impacts, the Board may extend the review of that project's impacts beyond the referenced criteria of Act 250 under Section 248(b)(5).

GMCW contends in its reply brief that ANR is advocating for a "novel concept" that stricter standards of environmental review are appropriate for renewable generation projects and states that this concept is inconsistent with public policy. ANR's reply brief states:

> The statute incorporates many of the Act 250 criteria by reference, including necessary wildlife habitat and endangered species under 10 V.S.A. § 6086(a)(8)(A). As the Board announced in *East Haven*, the Board's inquiry, however, is not constrained by the Act 250 criteria.[25]

GMCW contends that such a reading is inconsistent with public policy and the intent of the statute. GMCW asserts that Vermont state policy is to encourage the development of renewable energy. GMCW further maintains that the "'due consideration' language of Section 248 gives the Board flexibility in reaching its determination of whether a project promotes the public good."[26] Finally, GMCW reviews the legislative history associated with specifying the Act 250 criteria within Section 248.

GMCW's argument in this regard is misplaced. The Board has consistently held that Section 248(b)(5)

> requires that the Board find that the Project will not have an undue adverse effect on the natural environment, with due consideration given to several criteria included in Act 250. In practice, we examine the Act 250 criteria specifically and utilize them to guide us in assessing whether the effect on the natural environment is unduly adverse. But our evaluation under the Act 250 criteria is not dispositive, as we must, in

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25. ANR Brief at 21.

26. GMCW Reply Brief at 3, citing *In re City of South Burlington,* 133 Vt. 438, 447-448 (1975).

> the end, apply Section 248(b)(5) and determine whether the Project will have an undue adverse effect on the natural environment.[27]

This analysis does not impose stricter environmental review, as GMCW contends. Instead it simply recognizes the express statutory requirement — that the Board must find that the Project will not have an undue adverse impact on the natural environment. GMCW's contention that our review under Section 248(b)(5) is restricted to the incorporated criteria of Act 250 ignores the explicit statutory language that the Board must make the broad finding specified by the plain language of Section 248(b)(5), giving *due consideration* to the Act 250 criteria. We have been consistent in our review of projects under Section 248(b)(5) and often expand our analysis of the project's impacts beyond the narrow Act 250 criteria.

GMCW contends that the idea that Board review of the environmental impacts of a project under Section 248(b)(5) is not limited to the specified Act 250 criteria is a "novel concept." We disagree and conclude that such review is consistent with a straightforward reading of the statute[28] and Board precedent. Such review is not contrary to public policy — while the Vermont Legislature has passed legislation encouraging renewable energy, it has not altered the criteria of Section 248. Additionally, GMCW itself admits that the purpose of specifying that the Board give "due consideration" to the Act 250 criteria is to provide the Board with flexibility in determining whether the Project promotes the general good of the state. This flexibility does not work in one direction — i.e., only to the benefit of petitioners; but instead provides the Board with the flexibility needed to ensure that the Project will not have an undue adverse impact on the natural environment and public health and safety, including evaluating impacts that may not neatly fall within the specific language of the Act 250 criteria.

The Act 250 criteria do provide guidance to the Board as we review the impacts of a Project. However, pursuant to the plain language of Section 248(b)(5), the Act 250 criteria are not controlling in our determination as to whether a project will have undue adverse impacts on

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27. *Petition of Deerfield Wind, LLC,* Docket 7250, Order of 4/16/09 at 73, citing *City of South Burlington v. Vermont Electric Power Co.*, 133 Vt. 438 (1975).

28. Because the statutory language is clear, there is no need to address the legislative history. However, we note that the legislative history quoted by GMCW in fact supports the conclusion that the Act 250 criteria were added to Section 248(b)(5) to provide guidance regarding the Board's evaluation of environmental and aesthetic impacts rather than as a requirement that the Board strictly adhere to the Act 250 criteria.

aesthetics, historic sites, air and water purity, the natural environment, and public health and safety.

67. The Project will not have an undue adverse impact on aesthetics, historic sites, air and water purity, the natural environment, and public health and safety. This finding is supported by Findings 68–255, below.

Public Health and Safety

[30 V.S.A. § 248(b)(5)

Findings

68. The Project will not have an undue adverse impact on public health and safety, with the conditions discussed in this section. This finding is supported by Findings 69–84, below.

Shadow Flicker

69. Modeling analyses of potential shadow-flicker effects demonstrate that the closest residences to the Project along North Road and Georgia Mountain Road will experience less than 7.1 hours of shadow flicker over the span of one year, not accounting for the impacts of blocking vegetation. When the tree canopy is considered, the incidence of shadow flicker is likely to be less. Zimmerman reb. pf. at 7-8; exh. Petitioner REB-JLZ-4.

70. The effects of shadow flicker will be limited due to the number of turbines and the distance of any residences or locations that might potentially be affected. Exh. Petitioner DR-2 at 27.

Ice Throw

71. The potential for ice throw is addressed by a study by Seifert et al., *Risk Analysis of Ice Throw From Wind Turbines* (2003), which explains that a "risk circle" for ice throw is established by the equation d = (D + H) X 1.5, where d = maximum throwing distance; D = rotor diameter in meters; and H = Hub height in meters. When this formula is applied to the largest turbines under consideration for the Project, with a hub height of 85 meters and a rotor diameter

of 100 meters, the risk circle around the wind turbine tower has a radius of 277.5 meters (910 feet). Zimmerman reb. pf. at 4-5; exh. Petitioner REB-JLZ-1; tr. 2/4/10 at 66 (Zimmerman).

72. Newer studies which have evaluated empirical evidence of actual ice shedding from turbines have observed that most of the ice fell directly underneath the rotor and that the potential risk circle overstated the areas subject to possible ice throw, as none of the ice that was shed approached the boundary of the risk circle. In that analysis, ice was found to reach approximately two-thirds of the way from the turbine to the risk circle boundary (approximately 607 feet based on the 910-foot risk circle). Tr. 2/4/10 at 66-67 (Zimmerman).

73. Under certain circumstances, ice throw could occur over the FitzGerald property boundary line. Tr. 2/4/10 at 50 (Zimmerman).

74. Icing conditions are expected on the turbine blades every winter. Tr. 2/10/10 at 244 (Zimmerman).

75. The turbine manufacturer will provide the operational plan for the Project based on the type of turbine selected. The operational plan will include shut-down strategies to be put in place during potential icing conditions. Tr. 2/10/10 at 55-56 (Zimmerman).

76. Gates will be installed on both ends of the roads leading to the Project to prevent snowmobile access in the winter. Tr. 2/10/10 at 237-238 (Harrison).

77. There are no residences, public roads or other receptors that are within ½ mile of the Project where icing conditions could potentially exist. There are no public trails that lead to the summit, and the access road will be gated and locked when the site is unattended. Snowmobile trails will be signed to warn of potential danger during winter icing conditions, and routed so as to maintain a safe distance from the turbines. Zimmerman pf. at 35-36; tr. 2/4/10 at 45 (Zimmerman).

78. There are existing trails on Jane FitzGerald's property near the summit of Georgia Mountain. Exh. Petitioner AE-2 at 3.

79. To the extent that the proposed turbine sites are currently being used for recreational purposes, GMCW plans to work with those users to divert them around the sites to ensure safe recreational use. Tr. 2/10/10 at 67 (Zimmerman).

Proximity to Property Line

80. The turbines will be between 230 to 328 feet high at the nacelle and 353 to 443 feet high at the tip of the blades. Exh. Petitioner-JH-1 at 2.

81. GMCW proposes that Turbines 1, 2, and 3 be located 150 feet from the FitzGerald property line. Exhs. Petitioner PC-Cross-9, Petitioner PC-Cross-11, and Petitioner PC-Cross-12.

82. GMCW proposes to position Turbines 1, 2, and 3 so that the nacelle is located one rotor radius from the FitzGerald property line; accordingly, the tip of the turbine blades will be at the property line. Tr. 2/4/10 at 51 (Zimmerman).

83. It would be dangerous to walk underneath a wind turbine with or without ice on it. For example, a turbine collapse recently occurred in New York Tr. 2/10/10 at 244, 247 (Zimmerman).

84. On very rare occasions, wind turbines do collapse. Tr. 2/10/10 at 244 (Zimmerman).

Discussion

In this proceeding, the Landowner Intervenors raised several concerns related to the impact of the proposed Project on public health and safety. We address the potential impacts of the proposed Project associated with shadow flicker, ice throw, and the proximity of the Project to adjoining property lines below.

The Landowner Intervenors assert that shadow flicker caused by the Project will negatively affect the home-school communities in the area around Georgia Mountain. They contend that shadow flicker caused by the Project will create distractions and a situation that is not conducive to learning.[29] We conclude that the potential shadow flicker is not likely to have an undue adverse effect due to the limited number of hours per year that shadow flicker will occur, and given the mitigating effects of vegetation. The actual effect will therefore be limited.

The Landowner Intervenors also raised concerns related to the potential for ice throw from the turbines' rotor blades. We recognize that GMCW intends to reduce the public safety risk associated with ice throw by gating the access roads and posting signs to warn and discourage snowmobilers from entering dangerous areas. These measures are a good first step; and, as a condition of our approval of the Project, we require GMCW to implement these

29. Landowner Intervenors Brief at 13.

measures. Although GMCW states that the operational plan for the turbines selected will include shut-down strategies to address icing conditions, GMCW has not yet specified the measures that it would implement with respect to the turbine operations. GMCW concedes that ice throw has the potential to impact adjoining property owners. We require GMCW to submit for Board approval an operating protocol that would shut down the turbines during icing conditions, to ensure that GMCW mitigates risk from a facility operations perspective.[30]

The Landowner Intervenors also contend that the Project, as proposed, fails to provide an appropriate distance between the turbines and adjoining property lines. They assert that the 150-foot setback from the turbine to the property line does not adequately protect the adjoining property owner from public safety and health risks such as ice throw and blade throw.[31]

As proposed by GMCW, three of the Project turbines' towers would be located such that the base of the turbines will be as close as one rotor radius from the edge of the property line.[32] Accordingly, the tips of three of the Project-turbines' rotor blades could be at Mrs. Fitzgerald's property line.[33] Mrs. Fitzgerald notes that if any of the Project's three closest turbines collapsed it would lead to unsafe conditions on her property because the turbines could reach heights of 443 feet.[34]

GMCW argues that the Landowner Intervenors failed to present a demonstrable safety basis for imposing a setback requirement, such as a setback to the property line based on total turbine height.[35] We disagree; the testimony presented by GMCW indicates that ice throw could impact neighboring landowners and that turbine collapse, while rare, can occur. Accordingly, a wind turbine with its base set as close as one rotor radius from the property line of an adjoining

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30. *See* Petition of East Haven Wind Farm, Docket 6911, Order of 7/17/06 at 32 (note Hearing Officer's recommendations).

31. Landowner Intervenors Brief at 14. Blade throw refers to a rotor blade detaching from the nacelle of the turbine.

32. Tr. 2/4/10 at 51 (Zimmerman).

33. GMCW used the length of one rotor blade as the "setback" distance from Mrs. Fitzgerald's property line. Tr. 2/4/10 at 51 (Zimmerman).

34. Jane FitzGerald pf. at 6.

35. Tr. 2/10/10 at 241-242 (Zimmerman).

property owner has the potential to impact that owner. Furthermore, while the Board may impose conditions on GMCW to prevent public safety risks on its property, the Board does not have the authority to impose similar conditions (for example, signs to warn snowmobilers of potential ice throw) on adjoining landowners. For this reason, we conclude that a condition requiring GMCW to place the turbines a reasonable distance away from a property line is appropriate to mitigate potential public safety risks associated with ice throw and collapse. Further, we note that other state and local public agencies have addressed potential public health and safety impacts of wind turbines by establishing setbacks based on the size of the turbine, including the blades.[36] Setbacks are not an uncommon requirement in land-use planning; the Vermont Supreme Court in *In re Letourneau*, 168 Vt. 539, 544 (1998) found that setback requirements, which reasonably relate to the public health, safety, and welfare, are a generally valid land-use tool.[37]

At the technical hearing, the Board attempted to obtain from the Petitioner's witness other potential setback distances based on the specific properties of the Project site. However, Mr. Zimmerman did not provide any specific alternatives to the 150-foot proposed setback for the three turbines.[38] We conclude that the record in this proceeding lacks sufficient evidence to determine a reasonable setback requirement for this Project. Accordingly, our approval of this

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36. *See* NYSERDA, Wind Energy Model Ordinance Options, available at http://www.powernaturally.org/Programs/Wind/toolkit/2_windenergymodel.pdf. More specifically, in Monterey County, California, the minimum setback for a wind turbine is two times the total height of the turbine from any property line, five times its height from the right-of-way line of any public road, and one and one quarter times its height from any habitable structure. Monterey Co., CA, Monterey County Zoning Ordinance Section 21.64.120(C)(2). In addition, in Cohocton, NY, the setback for non-industrial turbines from property lines and roads is equal to one- and-a-half times its height. Industrial turbines must be set back a distance equal to their height plus 100 feet from property lines, roads, and power lines, and they must also be at least 1,500 feet removed from any residences or areas normally used by the public. http://www.gflrpc.org/programareas/wind/LL/CohoctonWindmillLaw.pdf

37. *In re Letourneau*, 168 Vt. 539, (1998) ("The United States Supreme Court long ago determined that as a general proposition setback requirements are valid as reasonably related to the public health, safety and welfare.").

38. Tr. 2/10/10 at 248-252 (Zimmerman).

Project is conditioned on our determination of a reasonable setback requirement in further proceedings to be held in this docket should GMCW choose to proceed with this Project.[39]

Outstanding Resource Waters

[10 V.S.A. § 1424(a)(d)]

85. The Project is not located near any outstanding resource waters. Exh. Petitioner-AE-2 at 30.

Water and Air Pollution

[10 V.S.A. § 6086(a)(1)]

86. The Project will not result in undue water or air pollution. This finding is supported by Findings 87–129, below.

Air Pollution

Findings

87. The Project, at 7.5 MW (the low end of possible project sizes), will offset greenhouse gas ("GHG") emissions, including approximately twenty million pounds of carbon dioxide. Zimmerman pf. at 10-11.

88. GMCW will have a geotechnical engineering firm conduct a survey prior to any rock blasting, and will notify landowners within a half-mile radius of the Project in advance of any rock blasting. Tr. 2/10/10 at 65 (Cross); Harrison pf. reb. at 8.

89. GMCW will limit blasting activities to occur between 9:00 AM and 5:00 PM Monday through Friday. GMCW will hire only licensed and certified blasting technicians, who will be required to carry adequate insurance and meet all local, state, and national regulations and requirements, including those established by the Vermont Department of Public Safety. GMCW will also require in its contracts that noise and air blast effects will be limited through application

39. Mr. Zimmerman stated that moving the turbines would be difficult considering the constraints related to wind conditions and slope and that even with four turbines, rather than five, the modeling program used to determine the turbine locations continues to site two turbines at the summit of Georgia Mountain between the cell tower boundary line and the FitzGerald property line. Tr. 2/10/10 at 248-251 (Zimmerman).

of proper techniques and that blasting mats be used where needed to limit the occurrence of flyrock. Harrison pf. reb. at 8.

90. Dust generated from construction activities is not expected to migrate a significant distance from the construction site and, under most circumstances, will not impact residences on North Road. If necessary, GMCW will employ blasting mats to restrain dust migration. Tr. 2/10/10 at 62-64 (Cross).

91. During the eighteen weeks of projected construction, the Project will generate approximately 2,120 vehicular round trips total. The number of trips during construction will vary from zero to thirty vehicular round trips per day. During operations, the Project will generate approximately one or two car trips per week. Cross pf. at 7-8; tr. 2/8/10 (Parsons).

Discussion

Several of the Landowner Intervenors have expressed concerns about air and water pollution from blasting, construction, and permanent forest clearing for access roads and transmission lines. The Landowner Intervenors are concerned about the potential negative impacts of airborne pollutants on human and animal health.[40]

The Landowner Intervenors are also concerned about the potential of stormwater runoff and construction debris to pollute, or divert water from, their wells and feeder streams.[41]

First we acknowledge that the Project's construction will adversely impact air quality due to blasting, road construction, and component deliveries. We are sensitive to the potentially negative human- and animal-health effects created by such disturbances and proceed with our analysis with this in mind. The Project includes several measures and conditions to mitigate these disturbances.

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40. *See e.g.,* tr. 2/10/10 at 149 and 231 (Tina Fitzgerald) (discussing concerns about her childrens' asthma issues from the particulate matter associated with blasting and rock crushing); McLane pf. at 4. (discussing concerns about their child who suffers from chronic lung disease); Mongeon pf. at 2 (discussing concerns about his lung problems from vehicular travel during construction); tr. 2/10/10 at 232-33 (Fitzgerald) (raising concerns about cattle and horses drinking from springs and feeder brooks after blasting and rock crushing).

41. *See e.g.,* Fitzgerald pf. at 5-6 (discussing well contamination concerns); Daniel and Tina Fitzgerald pf. reb. at 2 (discussing concerns about blasting and stormwater runoff contaminating and/or diverting water supplies for homes and animals); Wimble pf. at 2 (voicing concerns about water supply diversion); Mongeon pf. at 2 (same); Cook pf. at 1 (same).

With respect to air pollution, ANR is not requiring an air pollution control permit for the Project.[42] In fact the Project will reduce, rather than create, air pollution during its operation by offsetting GHG emissions.[43]

During construction, vehicle trips, up to thirty per day, will likely create adverse conditions for those with sensitive health conditions. However, the Project's construction is for a limited duration, approximately eighteen weeks, and will be limited to the hours between 7:00 AM and 5:00 PM, Monday through Saturday, and will not occur on Sundays or on state or federal holidays. The Project-related traffic will be most prevalent during the construction of the access roads, lasting approximately eight to twelve weeks. Overall construction-related traffic will vary greatly and on some days there will be no Project-related traffic.[44] In addition, the Project will avoid some dump-truck trips by crushing bedrock on-site and using the aggregate as a base for the new and upgraded roadways.[45] We require GMCW to file a plan for Board approval identifying necessary actions to reduce dust from vehicle traffic and rock crushing during construction. Thus, traffic is unlikely to result in undue adverse effects on air quality.

During construction, a significant concern is the impact of dust from blasting on air quality. However, GMCW has voluntarily committed to several measures that will mitigate these concerns, such as providing notice about blasting to nearby landowners, limiting blasting hours, limiting vehicle traffic hours, and controlling flyrock and dust migration. GMCW has also agreed to create a blasting plan similar to the one approved by the Board in UPC Wind.[46] We conclude that these measures are generally acceptable and, with the modifications noted below, we include these measures as conditions in this Order.

GMCW has committed to providing notice of blasting to residences within a half mile radius of the Project; in its blasting plan to be filed for Board approval, GMCW shall explain

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42. Reply Memorandum of ANR, Docket 7508 (filed Apr. 1, 2010) ("The wind turbines will not generate any air pollutants. Accordingly, operation of the Project will not require an air pollution control permit from ANR.").

43. Zimmerman pf. at 10-11 (including offsetting over twenty million pounds of carbon dioxide).

44. Cross pf. at 7-8; tr. 2/8/10 (Parsons).

45. Cross pf. at 7.

46. Petitioner's Reply Brief, filed by GMCW, Docket 7508 (filed Mar. 31, 2010) (referencing Docket 7156, Orders of 8/8/07 at 52-53 and 1/28/09).

why the half-mile radius is sufficient and identify on a map the residences that would receive such notice. GMCW proposes to limit blasting activities to 9:00 A.M. to 5:00 P.M., Mondays through Fridays; we further require that GMCW not allow blasting activities to occur on state or federal holidays. Prior to construction, GMCW shall file a proposed blasting plan with the Board for review and approval.

In conclusion, we find that the Project's negative impacts on air quality will be adverse, particularly during construction. However, we note that the long-term air-quality benefits of a renewable resource such as the Project outweigh the short-term impacts associated with construction. Accordingly, we find that negative impacts on air quality will be adequately mitigated by GMCW's adherence to the conditions proposed by GMCW and those discussed above.

Water Pollution

Findings

92. The Project area includes springs that supply water to local residents. Fitzgerald pf. at 5-6; Daniel and Tina Fitzgerald pf. reb. at 2; Wimble pf. at 2; Mongeon pf. at 2; Cook pf. at 1.

93. If permission is given by potentially affected homeowners, GMCW will monitor area residents' artesian wells for supply and potential contamination before, during, and after the construction phases of the Project. Tr. 2/10/10 at 232-33 (Harrison).

94. GMCW has obtained a Construction General Permit for Erosion and Sediment Control on Construction Sites from ANR in connection with its Erosion Prevention and Sediment Control ("EPSC") Plan. Cross pf. at 10-11; Cross reb. pf. at 2.

95. The EPSC Plan includes the use of silt fence, check dams, sediment basins, and diversion swales. Cross pf. at 10.

96. GMCW has obtained a National Pollutant Discharge Elimination System ("NPDES") construction permit. Tr. 2/4/10 at 91-92 (Cross).

97. GMCW has obtained a Stormwater Discharge Operation Permit from ANR in connection with its stormwater plans. Cross pf. at 10; Cross reb. pf. at 2; exhs. Petitioner-PC-12-15; tr. 2/4/10 at 91 (Cross).

98. The Project's stormwater features include stormwater collection channels or stone riprap-lined ditches along the roadways to detain and redirect water. The Project also includes four detention ponds and one sediment trap. Tr. 2/4/10 at 96-98 (Cross); tr. 2/10/10 at 44-45 and 49-52 (Cross).

99. Clearing for the roadways and stormwater features will be approximately 75-feet to 150-feet wide. Tr. 2/10/10 at 51 (Cross).

100. The stormwater features will remain throughout the life of the Project. Tr. 2/4/10 at 91-92 (Cross).

101. Both dry and mineral-oil transformers are routinely used in the wind industry. If the mineral-oil transformers are used, GMCW will install oil containment and the site maintenance plan will include routine inspections. Zimmerman pf. at 8.

Discussion

With respect to water pollution, GMCW has obtained the appropriate water-quality permits from ANR. GMCW shall file these permits with the Board and parties. The Project will not require a CUD, in relation to wetlands.[47] GMCW has obtained a Stormwater Discharge Operating Permit, a NPDES construction permit, and a Construction General Permit for Erosion and Sediment Control on Construction Sites.[48]

During construction, forest clearing, road construction, and component deliveries will affect some wetlands and the area's water flows and quality. However, the Project is designed to prevent soil erosion, which would divert or pollute water supplies, with the inclusion of a silt fence, check dams, sediment basins, and diversion swales.[49] The Project is also designed to permanently prevent stormwater runoff from polluting water supplies, with the inclusion of four detention ponds, one sediment trap, stormwater collection channels, and stone riprap-lined

47. Tr. 2/9/10 at 12-13 (Quakenbush).

48. Cross pf. at 10-11; Cross reb. pf. at 2; exhs. Petitioner-PC-12-15; tr. 2/4/10 at 91-92 (Cross). As noted by GMCW's attorney, environmental permits create rebuttable presumptions of compliance with the relevant statutory criteria. *Joint Petitions of Vt. Elec. Power Co. And Green Mtn. Power Corp.*, Docket 6860, Order of 7/6/05 at 1. However, since GMCW failed to file its environmental permits with the Board, we must rely upon the evidence provided during the technical hearings, rather than the rebuttal presumption.

49. Cross pf. at 10.

ditches along the roadways to detain and redirect water.[50] Importantly, GMCW also agreed to create a plan that includes pre- and post-construction monitoring of residential wells within an appropriate radius of the Project. The plan must identify the measures that GMCW will take to remediate any damage to residential wells. We require GMCW to file the plan with the Board and parties for Board approval.

GMCW has not selected the specific turbines that will be installed at the site. However, GMCW has committed to installing oil containment if transformers containing mineral oil are utilized.

Based on these factors, we conclude that any adverse affects on water quality and supply will not be undue with the conditions imposed in this Order.

Headwaters

[10 V.S.A. § 6086(a)(1)(A)]

Findings

102. The Project will meet all applicable health and environmental conservation regulations regarding reduction of the quality of ground or surface waters flowing through or upon headwaters areas. This finding is supported by Findings 103–105, below.

103. The Project area includes wetlands and intermittent streams, considered headwaters. Exh. Petitioner-AE-2 at 30.

104. The Project involves development within areas generally below 1500 feet elevation, but does contain areas of steep slopes and drainage areas of twenty square miles or less. Exh. Petitioner-AE-2 at 30.

105. The Project has been designed to avoid wetland and stream crossings where practicable. With careful project design and construction specifications, there will be no adverse impact to headwater resources. Exh. Petitioner-AE-2 at 30.

Discussion

GMCW's environmental consultants concluded that adverse impacts to headwater resources can be avoided through careful project design and construction specifications. In this

50. Tr. 2/4/10 at 96-98 (Cross); tr. 2/10/10 at 44-45 and 49-52 (Cross).

Order we require GMCW to file final design plans for Board approval prior to construction; when filing these final design plans, GMCW must identify how the design and construction of the Project will ensure that there will be no adverse impact to headwater resources. Our review of the final design plans will include consideration of how the project design and construction specifications avoid adverse impacts to headwater resources.

Waste Disposal

[10 V.S.A. § 6086(a)(1)(B)]

Findings

106. The Project will meet applicable health and Vermont Department of Environmental Conservation ("DEC") regulations for waste disposal. The disposal of construction debris will have little to no impact on the ability of regional solid waste facilities to provide disposal services. Zimmerman pf. at 34.

Discussion

Wind generation facilities sometimes involve hazardous materials, including oil for step-up transformers. Therefore, if hazardous materials are generated during the construction or operation of the project, GMCW must store and dispose of any such materials in accordance with local and State hazardous waste laws and consider whether the Project requires an Environmental Protection Agency ("EPA") Small Quantity Hazardous Waste License.

Water Conservation

[10 V.S.A. § 6086(a)(1)(c)]

Findings

107. The Project does not require a water supply and therefore will not have any impact under this criterion. *See generally* Findings 1–34, above (Project description).

Discussion

GMCW's witnesses failed to state specifically that the Project will not require a water supply; however, GMCW made such a representation in its brief.[51] Based upon the description of the Project as presented in GMCW's testimony and exhibits, it does not appear that any water will be used, with the exception of water for dust control during construction. Accordingly, to the extent that GMCW utilizes water for dust control, GMCW must truck in water from an appropriate source off-site.

Floodways

[10 V.S.A. § 6086(a)(1)(D)]

Findings

108. The Project will not restrict or divert flow of floodwaters or increase the peak discharge of the streams and endanger the health, safety, and welfare of the public or of riparian owners during flooding. This finding is supported by Findings 109 and 110, below.

109. The Project does not include any disturbance or activity within a designated floodway or shoreline. Exh. Petitioner-AE-2 at 29.

110. Two Federal Emergency Management Agency ("FEMA") flood hazard "A" zones are within proximity of the Project, but neither is closer than 1/4 mile from the Project's construction and operation area. Exh. Petitioner-AE-2 at 29.

Streams

[10 V.S.A. § 6086(a)(1)(E)]

Findings

111. The Project will not have an undue adverse impact on streams in the Project area. This finding is supported by Findings 112–115, below.

112. The Project property includes numerous small, intermittent streams. None of these streams include FEMA-mapped flood hazard areas. Exh. Petitioner AE-2 at 29.

113. The Project involves two stream crossings, but these stream crossings, for the access road and the overhead transmission line, are limited to areas with pre-existing road crossings (Ted Road and Wetland #15 all-terrain vehicle trail). Exh. Petitioner AE-2 at 29-30.

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51. GMCW Brief at 52.

114. Where the Project's access road crosses the Ted Road stream, the existing roadway will be utilized with no impacts to the stream. Exh. Petitioner AE-2 at 30.

115. Where the Project's transmission line crosses the ephemeral stream within Wetland #15, swamp mats will be utilized to avoid any adverse impacts from construction. Exh. Petitioner AE-2 at 30.

Shorelines

[10 V.S.A. § 6086(a)(1)(F)]

116. The Project will not have an adverse impact on shorelines. The Project's clearing zone will be, at its closest point, 0.84 miles from Arrowhead Lake. The Project will not impact the Arrowhead Lake shoreline. Exh. Petitioner AE-2 at 29.

Wetlands

[10 V.S.A. § 6086(a)(1)(G)]

Findings

117. The Project will not have an undue adverse impact on wetlands. This finding is supported by Findings 118–127, below.

118. The Project area, according to the Vermont Significant Wetland Inventory maps, does not include any Class I wetlands, but does include one Class II wetland (Wetland #36). Class II Wetland #36 is located along the route adjacent to Ted Road. Ted Road is already located within the Class II Wetland #36's fifty-foot buffer zone. The Project will not widen the section of Ted Road adjacent to the wetlands area. Therefore the Project, as proposed, will not impact any Class I or II wetland resources. Exh. Petitioner-AE-2 at 6 and 24-25; tr. 2/10/10 at 69 (Cross).

119. The Project, as proposed, will not require a CUD. Tr. 2/9/10 at 12-13 (Quakenbush).

120. The Project study area includes thirty-five Class III wetlands (eleven within the vicinity of the Project's clearing zone). Two of the thirty-five Class III wetlands have "significant functions" (Wetlands #8 and #31) and three of thirty-five will be directly impacted by the proposed Project (Wetlands #15, #22, and #34). Exh. Petitioner-AE-2 at 23-27.

121. Class III Wetlands #8 and #31 are vernal pools that are not within the Project clearing zone. Wetland #8 is located outside the Project's northern property boundary and 270 feet from

the clearing zone. Wetland #31 is located along the ridgeline, south of the proposed turbine locations, and seventy-seven feet away from the clearing zone, at its closest boundary. The Project was sited to avoid impacting this wetland area. Exh. Petitioner-AE-2 at 22.

122. Class III Wetland #15 is located within the proposed overhead transmission line corridor. The transmission line corridor will be located across the narrowest part of the wetland, but Wetland #15 will be impacted by minimal clearing of trees in the upland buffer area. The transmission line crossing will not present undue or adverse impacts, or negatively affect the functions and values that the wetland performs. Exh. Petitioner-AE-2 at 26-27.

123. Class III Wetland #22 is located on the northeastern side of the intersection of Ted Road and Westford Road. The Project will impact approximately three square feet of the wetland due to clearing and site grading associated with widening Ted Road. Appropriate soil erosion control measures will avoid short-term adverse impacts on this wetland's function and value. The Project will not have adverse impacts on the long-term capacity of this wetland to provide its functions of water storage, water protection, and erosion control. Exh. Petitioner-AE-2 at 25.

124. Class III Wetland #34 is located to the east of North Road within the proposed overhead transmission line corridor. The transmission line corridor will be located along an existing all-terrain vehicle trail on the north side of the wetland, and will likely include a single power pole within the wetland. Wetland #34 will be impacted by the installation of the power pole within the wetland. Exh. Petitioner-AE-2 at 27-28.

125. Adverse impact on Wetland #34 can be avoided by adherence to the following construction specifications: (1) utilizing timber swamp mats to create a sixteen-foot-wide access drive to each pole location; (2) utilizing large-tire, all-terrain-style vehicles; (3) mulching any soil disturbances with weed-free straw immediately upon removal of the swamp mats; and (4) removing and disposing of any soils, displaced by pole holes, outside of the wetland area. Exh. Petitioner-AE-2 at 28.

126. Class III Wetland #21 is a shallow emergent marsh located on the ridgeline and adjacent to the clearing zone. The Project will have no, or limited, impact on wetland #21 because the wetland is highly disturbed by all-terrain vehicle use, its buffer zone has very low functionality, and the wetland area is outside the clearing zone. GMCW shifted the Project's clearing zone to

avoid clearing in this wetlands area. Exh. Petitioner-AE-2 at 24; tr. 2/10/10 at 132-33 and 139 (Lew-Smith).

127. GMCW has obtained a Construction General Permit for Erosion and Sediment Control on Construction Sites from ANR in connection with its EPSC Plan. Cross pf. at 10-11; Cross reb. pf. at 2.

Discussion

GMCW has undertaken certain mitigation and avoidance measures, including shifting the clearing zone, such that no Class I or Class II wetlands will be impacted by the Project.[52] GMCW and ANR agree that the Project, as proposed, does not impact any "significant wetlands," defined as Class I and Class II wetlands by the Vermont Wetland Rules, and will not require a CUD.[53]

GMCW will clear and grade a three-square-foot section of the Class III Wetland #22 area adjacent to Ted Road and will locate a single power pole within the Class III Wetland #34 area. GMCW's wetlands expert determined that the Project will not have adverse impacts on the long-term capacity of Wetland #22 to provide its functions of water storage, water protection, and erosion control.[54] However, GMCW's expert recommended that appropriate soil erosion control measures should be utilized to avoid short-term impacts to Wetland #22. In addition, GMCW's expert stated that GMCW could avoid adversely impacting the Wetland #34 area by (1) utilizing timber swamp mats to create a sixteen-foot-wide access drive to each pole location; (2) utilizing large-tire, all-terrain-style vehicles; (3) mulching any soil disturbances with weed-free straw immediately upon removal of the swamp mats; and (4) removing and disposing of any soils, displaced by pole holes, outside of the wetland area. We conclude that the Project will avoid any undue adverse impacts to Class III wetlands provided that GMCW utilizes the construction specifications recommended by its wetlands expert.

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52. *See* Vermont Wetland Rules.

53. Tr. 2/9/10 at 12-13 (Quakenbush); exh. Petitioner-AE-2 at 6 and 24-25; tr. 2/10/10 at 69 (Cross).

54. Exh. Petitioner-AE-2 at 25.

Sufficiency of Water and Burden on Existing Water Supply

[10 V.S.A. §§ 6086(a)(2)&(3)]

128. The Project will not cause an unreasonable burden on existing water supplies. This finding is supported by Findings 92–101, above (discussing the sufficiency of water and burden on existing water supply within the water pollution criterion).

Soil Erosion

[10 V.S.A. § 6086(a)(4)]

Findings

129. The Project will not cause unreasonable soil erosion or a reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result, provided that GMCW constructs the Project's roads and turbine foundations in accordance with its stormwater permits, drainage plans, and Erosion Prevention and Sediment Control ("EPSC") Plan and permits. This finding is supported by Findings 92–101, above (Water pollution).

Transportation Systems

[10 V.S.A. § 6086(a)(5)]

Findings

130. The Project will not cause unreasonable congestion or unsafe conditions with respect to transportation. This finding is supported by Findings 132 and 132, below, and Findings 1–34, above (Project Description).

131. GMCW will determine whether the Project requires alterations or upgrades to any public roads or other public facilities to accommodate the turbines chosen for the Project. If any improvements are required, GMCW will obtain all necessary permits prior to construction and pay all costs associated with such improvements. Cross pf. at 8.

132. During operations, the Project will generate approximately one or two car trips per week. The Project's operation will not require heavy equipment vehicular trips. Cross pf. at 7-8; tr. 2/8/20 (Parsons).

Discussion

GMCW has indicated the measures that it will take to ensure that disruptions to traffic flows are minimized and appropriate safety measures are taken. A Ted Road resident expressed concern that several commercial enterprises were using and impacting Ted Road, but that the six private Ted Road residences were maintaining the road. GMCW presented testimony during the technical hearings that the Harrison family, who are the owners of GMCW, owns Ted Road, and GMCW agreed to maintain the integrity of Ted Road during the construction and operation of the Project.[55] GMCW also agreed to develop a Transportation Plan with the chosen turbine supplier in coordination with the VTrans.[56] We explicitly condition approval of the Project on the requirement that GMCW fulfill these obligations and receive the necessary state and local permits for any public road or public facility improvements required by the Project as well as receive the necessary permits from VTrans for oversized vehicles.

In addition, GMCW stated that the expected hours of construction would be from 7:00 AM to 5:00 PM Monday through Saturday and that construction was not expected to occur on Sundays or Federal and State holidays.[57] We specifically limit the Project's construction activities to the hours between 7:00 AM and 5:00 PM, Monday through Saturday and require that construction activities cease on Sundays and Federal and State holidays. We also require GMCW to file its Transportation Plan with the Board for approval and maintain the integrity of Ted Road during the construction and operation of the Project.

Educational Services

[10 V.S.A. § 6086(a)(6)]

133. The Project will not cause an unreasonable burden on the ability of a municipality to provide educational services. The Project will not result in an increase in the student population in the affected communities. Zimmerman pf. at 34.

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55. Tr. 2/10/10 at 223-24 (Harrison).

56. Exh. Petitioner-JH-1 at 3; Cross pf. at 4-6 and 8.

57. Cross pf. at 7 and 10.

Municipal Services

[10 V.S.A. § 6086(a)(7)]

Findings

134. The Project will not impact the ability of the municipalities to provide services. This finding is supported by Findings 135–138, below.

135. The Project will not increase demand on police, fire, and rescue services, which account for over 50% of the towns' budgets. Any Project impact will be negligible and the towns have the capacity to provide such services. Exh. Petitioner-RWH-2 at 12; Zimmerman pf. at 34.

136. The Project will provide an increased source of property tax revenue. Foley pf. at 5; exh. Petitioner-RWH-2 at 9-10.

137. The Project will not result in a net cost to the local towns or region, including costs associated with roads and bridges. After construction, there will be minimal traffic to and from the site. Tr. 2/5/10 at 16 (Heaps); exh. Petitioner-RWH-2 at 12.

138. GMCW's Transportation Plan will incorporate provisions for emergency vehicle passage to the Project. Exh. Petitioner-JH-1 at 3; Cross pf. at 4-6 and 8.

Discussion - Municipal Services

The Milton Fire Department has not provided written confirmation concerning its ability to fight a ground fire or any other type of fire at the Project site with an 18% road gradient. During the technical hearings, GMCW stated that it was still discussing the road gradient in relation to the fire department's needs and stated that the Milton Fire Department was consulting with the Milton Town Office and Selectboard about the matter. Prior to construction, we require GMCW to obtain, and file with the Board and parties, written confirmation from the Milton Fire Department that the Project area will be adequately served with fire-fighting coverage.

Aesthetics

[10 V.S.A. § 6086(a)(8)]

Findings

139. The Project will not have an undue adverse impact on the scenic and natural beauty of the area or aesthetics. This finding is supported by Findings 140–162, below.

140. The Project's three to five turbines will be arrayed along the western side of the summit of Georgia Mountain within an area of approximately 0.5 to 0.75 miles in length. Exh. Petitioner-DR-2 at 14.

141. The turbines will be from 230 to 328 feet in height at the nacelle and from 353 to 443 feet in height to the tip of rotor blades. Three hazard lights will be located on the turbine nacelles located at the ends and middle of the array of turbines. Exhs. DPS-JV-1 at 6, Petitioner-DR-2 at 4.

142. Access to the turbines will require approximately 2.2 miles of upgraded and new roadway. Access roads would be 17 feet wide and summit roads 35 feet wide (reduced to 20 feet wide after completion of construction). Exh. DPS-JV-1 at 6.

143. Georgia Mountain is a notable landform in the area due to its height of 1,437 feet, but it does not include important or outstanding visual qualities and does not constitute a distinctive landform in its shape or vegetative characteristics. Vissering pf. at 5; exh. Petitioner-DR-2 at 14.

144. The Project will be visible from many vantage points throughout the surrounding area due to the frequent occurrence of open meadows. Exhs. DPS- JV-1 at 7, Petitioner-DR-2 at 15.

145. The Project will be visible from many public areas including Interstate 89 and other public roads, Arrowhead Mountain Lake, and some areas within the villages of Milton and Fairfax. Exhs. Petitioner-DR-2 at 15, DPS-JV-1 at 8-23.

146. The Project will have an adverse impact on the aesthetics of the area because it will contrast in form, color, texture and scale with similar land uses in the surrounding area. Exh. DPS-JV-1 at 30-31.

147. However, the average person viewing the Project will not be shocked or offended because the majority of the public viewing areas are at a sufficient distance from the proposed turbines that the turbines would not dominate the view. Raphael pf. at 60; exhs. Petitioner-DR-2 at 15 and DPS-JV-1 at 35.

148. There will be limited views of the Project from most of the major public roads in the area. Where the Project will be visible from a road, the visibility will be intermittent due to vegetative screening along the roads and, due to the speed of the vehicle, the duration of the view would be limited. Exh. Petitioner-DR-2 at 15.

149. The closest turbine to Interstate 89 will be located approximately 3.3 miles from the highway on the northwestern end of Georgia Mountain. Exh. Petitioner-DR-2 at 4.

150. Arrowhead Mountain and Cobble Hill appear as more prominent landforms from Interstate 89 as both are closer to the viewer and more distinct in form than Georgia Mountain. Exh. DPS-JV-1 at 8.

151. The views of the Project from portions of Lake Champlain are from a distance of over 8 miles. The Project will be visible from Kill Kare and Burton Island State Parks and possibly from Grand Isle State Park. Foreground trees in these state parks will limit views of the Project from these areas. Raphael pf. at 5; exh. DPS-JV-1 at 21.

152. The Project will be visible from nearly all of Arrowhead Mountain Lake at distances under 2 miles. Exh. DPS-JV-1 at 22.

153. Pursuant to Federal Aviation Administration lighting guidelines, approximately three of the turbines will be lit at night with red pulsating lights. The lights are similar to those used on telecommunications towers that are found in other areas of Vermont. Exhs. Petitioner-DR-2 at 40 and DPS-JV-1 at 30.

154. The night-time lighting will be visible from some areas, but visibility will be mitigated by distance and the vertical beam spread of the lights. Exhs. DPS-JV-1 at 31 and Petitioner-DR-2 at 40.

155. The Project will not be visible from any historic sites for which views of Georgia Mountain are critical to the experience or interpretation of the resource. Exh. DPS-JV-1 at 24.

156. The Town of Milton Zoning Regulations state that the purpose of the regulations is "classify and guide the USES of land, buildings and STRUCTURES . . . in accordance" with the Town Plan and to "implement the purposes and policies set forth in the Plan . . . . " Exh. GMCW-Cross-Vissering-2 at 1.

157. The Town of Milton Zoning Regulations specifically identify Geogia Mountain as a "[s]cenic ridgeline" and state that "[i]n order to protect these ridgelines no STRUCTURE or BUILDING shall be visible above the existing treeline." Exh. GMCW-Cross-Vissering-2 at 26.

158. A telecommunications tower, approximately 120 feet in height, is located on the southeast end of the Georgia Mountain ridgeline. Exh. DPS-JV-1 at 5.

159. Both the Milton and Georgia Town Plans describe Georgia Mountain as a scenic area. However, neither plan provides specific reasons as to the area's scenic value or guidance as to how the area should be protected. Therefore, the Project does not violate a clear, written community standard contained in the Town Plans. Exhs. DPS-JV-1 at 31-33 and Petitioner-DR-2 at 46-48.

160. The Milton Town Plan's Energy Section states that renewable energy resources, including wind generation, may "help Milton reduce its dependence upon petroleum and other non-renewable resources." This section also specifically describes the installation of wind measurement towers on Georgia Mountain and lists the facilitation of renewable energy, including wind energy, as one of the Plan's Energy Goals. Exh. GMCW-Cross-Vissering-1 at 30.

161. The Regional Plan for Chittenden County and the Northwest Regional Plan both contain generalized goals for protecting scenic and aesthetic resources and do not constitute clear, written community standards regarding the Project. Exhs. Petitioner-DR-2 at 44-46 and DPS-JV-1 at 33-35.

162. Clustering the turbines will reduce the visual impact of the Project in the overall view. Raphael pf. reb. at 6; exh. Petitioner-REB-DR-2 at 11.

Discussion

In determining whether a proposed project would have an undue adverse impact on aesthetics, the Board has adopted the Environmental Board's Quechee test. The Board has previously summarized the Quechee analysis:

> In order to reach a determination as to whether the project will have an undue adverse effect on the aesthetics of the area, the Board employs the two-part test first outlined by the Vermont Environmental Board in Quechee, and further defined in numerous other decisions.
>
> Pursuant to this procedure, first a determination must be made as to whether a project will have an adverse impact on aesthetics and the scenic and natural beauty. In order to find that it will have an adverse impact, a project must be out of character with its surroundings. Specific factors used in making this evaluation include the nature of the project's surroundings, the compatibility of the project's design with those surroundings, the suitability of the project's colors and materials with the immediate environment, the visibility of the project, and the impact of the project on open space.

> The next step in the two-part test, once a conclusion as to the adverse effect of the project has been reached, is to determine whether the adverse effect of the project is "undue." The adverse effect is considered undue when a positive finding is reached regarding any one of the following factors:
>
> 1. Does the project violate a clear, written community standard intended to preserve the aesthetics or scenic beauty of the area?
>
> 2. Have the applicants failed to take generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings?
>
> 3. Does the project offend the sensibilities of the average person? Is it offensive or shocking because it is out of character with its surroundings or significantly diminishes the scenic qualities of the area?[58]

In addition to the Quechee analysis, the Board's consideration of aesthetics under Section 248 is "significantly informed by overall societal benefits of the project."[59]

No party disputes that the Project would have an adverse aesthetic impact. The proposed turbines, due to their sheer size and industrial nature, are out of character with the predominately rural surrounding area. The second step, pursuant to the Quechee test, is a determination of whether the adverse aesthetic impacts rise to the level of undue. This determination is made by answering the following questions: does the Project violate a clear, written community standard; has the Petitioner failed to take all reasonable steps to mitigate the Project's aesthetic impacts; or does the Project offend the sensibilities of the average person?

The Landowner Intervenors contend that the Georgia and Milton Town Plans and Zoning Regulations contain certain provisions that constitute clear, written community standards that would be violated by the Project. Specifically, the Landowner Intervenors cite to a portion of the Milton Town Plan which states that "building heights, scale and location also need to be sensitive to the area's topography" and that Milton "recognizes the importance of scenic views."[60] In addition, the Landowner Intervenors contend that the Milton Zoning Regulations

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58. Docket 7156, Order of 8/8/07 at 64–65.

59. *In Re: Northern Loop Project*, Docket 6792, Order of 7/17/03 at 28 ("Northern Loop").

60. Landowner Intervenors Brief at 26.

prohibit structures taller than the existing tree line, including wind turbines, on Georgia Mountain.[61]

The Petitioner asserts that, while the Milton and Georgia Town Plans make reference to aesthetics and scenic beauty, they lack specificity and measurable actions for preserving those qualities.[62] The Petitioner also contends that the Plans include language encouraging the development of renewable energy generation. In addition, the Petitioner contends that the Zoning Regulations do not constitute clear, written community standards and that, in any case, the zoning regulations are in conflict with the provisions encouraging renewable energy generation contained in the Milton Town Plan. Therefore, the Petitioner asserts, the Project will not violate a clear, written community standard.

Similarly, the Department contends that the Project will not violate a clear, written community standard contained in the applicable Regional or Town Plans.[63]

We conclude that the applicable Regional and Town Plans contain no clear, written community standards with which the Project would be inconsistent. In order for a provision to be considered a clear, written community standard, it must be "intended to preserve the aesthetics or scenic beauty of the area" where the proposed project is located and must apply to specific resources in the proposed project area.[64] Because the Project will be located in the Towns of Milton and Georgia we look first to the plans for those towns as the principal source in making this determination. The Town Plans of Milton and Georgia contain generalized provisions encouraging the protection of scenic ridgelines, such as Georgia Mountain, while acknowledging the benefits of commercial wind energy generation. The Town of Milton also specifically makes reference to Georgia Mountain as a potential wind energy site. The Chittenden County Regional Plan and the Northwest Regional Plans include similar generalized provisions encouraging the preservation of scenic vistas and rural landscapes. The Northwest Regional Plan contains provisions that "discourage" development along prominent ridgelines and

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61. Landowner Intervenors Brief at 26-28.

62. Petitioner Brief at 70.

63. Department Brief at 6, 15.

64. *In re Halnon*, NM-25, Order of 3/15/01 at 22 n.5.

"light pollution." However, that Plan also acknowledges that the benefits of wind power are "substantial" and that ridgelines are "currently critical to commercially viable wind generation sites."[65] The general scenic resource protection policies contained in these documents are not focused on a particular scenic resource and, in any case, do not offer specific guidance or measures to protect that resource. Therefore, we conclude that the regional and town plans do not set forth any clear, written community standards that would be inconsistent with the installation of a commercial wind project on Georgia Mountain.

Zoning regulations have been interpreted to constitute a clear, written community standard for purposes of the Quechee test.[66] Given our statutory charge, we conclude that zoning regulations are not the most appropriate source for a clear, written community standard under the Quechee test, as applied by the Board in Section 248 proceedings. Because towns often grant exceptions and variances to these ordinances on a case-by-case basis, it is difficult to rely on a zoning ordinance as a clear and consistent statement of a community's policies or standards. The ability of a town to grant zoning variances will, in many cases, result in different zoning standards being applied depending upon the individual circumstances of the permit application. Therefore, it is more appropriate to rely on the town plan as the primary source of clear written community standards.

In addition, zoning ordinances do not apply to generation facilities regulated under Section 248.[67] If zoning regulations were considered clear written community standards for the purpose of aesthetic review under Section 248(b)(5), these could have the effect of mandating a particular outcome to a Section 248 proceeding. Such an outcome is inconsistent with Vermont law; the Vermont Supreme Court has clearly stated that, with respect to Section 248 proceedings, "municipal enactments . . . are advisory rather than controlling."[68]

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65. Exh. DPS-JV-1 at 34-35.

66. *See e.g.,* EB: *Re: The Mirkwood Group and Barry Randall*, No. 1R0780-EB, WL 1996 528195 (August 19, 1996).

67. Pursuant to 24 V.S.A. § 4413(b), zoning bylaws "shall not regulate public utility power generating plants and transmission facilities regulated under 30 V.S.A. § 248." While, in this case, the Project is not owned by a public utility, it will be a regulated power generation facility under § 248.

68. *City of South Burlington v. Vermont Electric Power Company, Inc.,* 133 Vt. 438, 447 (1975).

In this case, the specific ordinance cited by the Landowner Intervenors, which prohibits structures taller than the treeline, directly conflicts with the goals of encouraging wind energy development contained in the Town Plan. Strict interpretation of this ordinance would have the effect of prohibiting commercial wind energy projects,[69] which must necessarily be located above the treelines at higher elevations, in large portions of the town. Accordingly, even if we were to consider zoning regulations as a clear written community standard for purposes of the Quechee test, this particular zoning regulation is inconsistent with the stated goals in the Town Plan.

Pursuant to Board precedent, we consider the societal benefits associated with a project when evaluating the project's aesthetic impacts. In this case, the evidence indicated that, from most if not all public views, the aesthetic impact of the Project is not shocking and offensive and GMCW has taken the generally available mitigation steps that can be taken for wind turbines. As we note in this Order, the Project provides societal benefits to Vermont through the addition of a renewable resource, pursuant to state policy, and through the requirement that GMCW enter into stably priced power contracts for a substantial portion of the Project's energy output. Accordingly, even if we were to consider the zoning regulations a clear written community standard for purposes of the Quechee test, we still conclude that, under our broader analysis of societal benefits, and as conditioned in this Order, the Project will not have an undue adverse aesthetic impact under Section 248(b)(5).[70]

The second step in evaluating whether the Project would have an undue adverse aesthetic impact is to determine whether the Petitioner has taken generally available mitigating steps which a reasonable person would take to improve the harmony of the project with its surroundings. It is not possible to completely conceal or screen a commercial scale wind project of this size from view. In order for the turbines to take advantage of the wind resource in Vermont, the turbines, in most cases, must be located at higher elevations and above tree lines and, consequently, will be visible to the surrounding area. In this case, the Petitioner has taken

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69. We note that the Milton Town Plan specifically recognizes that a wind measurement tower is located on Georgia Mountain.

70. *See, In re Petition of Tom Halnon*, CPG NM-25, Order of 3/15/01 at 10–11 ("Halnon"); *Petition of VELCO,* Docket 6860, Order of 1/28/05 at 80; *Petition of UPC Wind,* Docket 7156, Order of 8/8/07 at 65; *Petition of Deerfield Wind,* Docket 7250, Order of 4/16/09 at 61.

some steps such as using an existing access road, using light colored Project components, limiting clearing and placing electrical connections underground at the turbines, to minimize the aesthetic impact of the Project. Therefore, we conclude that Petitioner has taken reasonable steps to mitigate the aesthetic impacts of the Project.

The final step under the Quechee analysis is to determine whether the Project would be shocking or offensive to the average person. We conclude that while the Project will have adverse aesthetic impacts it will not offend the sensibilities of the average person. The Project will be visible from numerous vantage points, including some in close proximity. However, the Project is relatively small in scope and will not overwhelm the visual presence of its setting when viewed from most vantage points. Therefore, the average person would not find the scale of the Project shocking or offensive.

Noise

163. Noise levels produced by the Project will not have an undue adverse impact on public health or aesthetics. This finding is supported by Findings 164–174, below.

164. While audibility is difficult to predict with certainty, noise levels generated by the Project will likely be audible at some outdoor locations, including residential locations, in the area surrounding the Project site. However, the noise levels will be in compliance with the World Heath Organization ("WHO") nighttime noise impact criterion of 45 dBA. Letty pf. at 3-4; exh. Petitioner-KHK-2 at 16.

165. The WHO noise criterion is measured outside a bedroom window and is based on the assumption that sound levels inside a residence would be reduced by 15 dBa with windows open. Exh. Petitioner-KHK-2 at 6.

166. In order to evaluate the effect of noise on the surrounding area, Petitioner's noise consultants conducted background noise measurements at three locations in the vicinity of the Project over a period of four days. Exh. Petitioner-KHK-2 at 10.

167. Sound modeling, assuming five General Electric 1.5 MW capacity wind turbines, were used to calculate noise levels at approximately 950,000 receivers over a 36-square-mile grid in the area surrounding the Project. Exh. Petitioner-KHK-2 at 16.

168. The nearest homes to the Project site are approximately 3,700 feet away from the nearest turbine. Exh. Petitioner-KHK-2 at 16.

169. The worst-case modeled sound level at the nearest homes to the Project site is 40 dBA, outside of the residence, and represents the highest expected one-hour average sound level. This noise level would tend to occur on a clear night and with winds blowing at more than 8 m/s at turbine hub height.[71] Exh. Petitioner-KHK-2 at 16.

170. The average modeled sound levels using five 1.5 MW turbines over a twelve-hour night starting at 7:00 p.m. will not be greater than 40 dBA. Exh. Petitioner-KHK-2 at 16.

171. Sound modeling conducted using fewer turbines with larger capacity produced similar results. The indicated worst-case sound level using four General Electric 2.5 MW turbines is 40 dBA at the nearest residence. Modeling with three Vestas V90 3 MW turbines produced a worst-case sound level of 37 dBA at the nearest residence. Raphael pf. reb. at 28.

172. The majority of construction activity associated with the Project, including the use of large construction vehicles and other equipment, will occur at the turbine sites and take place during daylight hours. Any construction activity conducted closer to residences, such as road and utility work, will be of a relatively short duration. Exh. Petitioner-KHK-2 at 17-18.

173. Limited blasting may be required during Project construction. Blasting will be designed by a licensed blasting company and charges and delays will be set to comply with Bureau of Mines standards for vibration and airblast. Exh. Petitioner-KHK-2 at 18.

174. Noise from transformers and electrical lines associated with the Project will not have a significant impact on existing background sound levels. Exh. Petitioner-KHK-2 at 18-19.

Discussion

The Petitioner is the only party that has conducted a noise analysis in this case. The Petitioner argues that based on its acoustic analysis of the sound produced by the turbines and the background noise levels at receptors in the surrounding area, the noise produced from the project in the surrounding area will be well within WHO guidelines and also within the stricter noise-level standards the Board adopted in previous commercial wind project dockets.[72] The

71. Eight meters/second equates to 26.25 feet/second or 17.89 miles/hour.

72. *See Deerfield* and *UPC Wind*.

Petitioner also contends that it has taken or will take reasonable steps to mitigate any potential noise impacts associated with the Project such as: (1) conducting sound modeling; (2) using turbines designed to minimize noise impacts; and (3) conducting pre-construction turbulence modeling to ensure additional noise due to excessive turbulence is avoided.

The Department's noise expert conducted a peer review of the Petitioner's analysis and agreed with the findings therein. However, the Department argues that the Project will be audible at residential receptors and that the Petitioner's noise study does not sufficiently address this issue.

The Landowner Intervenors argue that noise from the Project will be audible at homes located in the area surrounding the Project. The Landowner Intervenors contend that stricter noise standards, than those modeled by the Petitioner, should be imposed here to protect against potentially excessive noise levels.

Noise from the Project will likely be audible at residences surrounding the Project. The potential for adverse noise impacts from the turbines is an important concern for the Board and one of the principal concerns raised by the parties in this case. The Board concludes here, as we have in previous cases related to commercial wind generation, that the imposition of absolute standards with regard to noise levels at the nearest receptor locations is an appropriate means to ensure these areas are not adversely impacted. These standards are based on the WHO guidelines for exterior residential noise and include an additional residential-interior-noise standard. We also conclude that noise-level standards are a necessary and appropriate means of ensuring that the public is not subject to adverse noise impacts from the construction or operation of the Project. Therefore, we adopt the following conditions with respect to noise from the Project:

> The Petitioner shall construct and operate the Project so that it emits no prominent discrete tones pursuant to American National Standards Institute (ANSI) standards at the receptor locations, and Project-related sound levels at any existing surrounding residences do not exceed 45 dBA(exterior)(Leq)(1 hr) or 30 dBA (interior bedrooms)(Leq)(1 hr).
>
> In the event noise from operation of the Project exceeds the maximum allowable levels, the Petitioner shall take all remedial steps necessary to bring the sound levels produced by the turbine(s) into compliance with allowable levels, including modification or cessation of turbine(s) operation.

> The Petitioner shall submit to the Board for review and approval a noise monitoring plan to be implemented during the first full year of operation. The Plan shall establish a monitoring program to confirm under a variety of seasonal and climatic conditions compliance with the maximum allowable sound levels described above.

Historic Sites

[10 V.S.A. § 6086(a)(8)]

Findings

175. The Project will not have an undue adverse impact on historic or archaeological resources. This finding is supported by Findings 176–186, below.

Archeological Resources

176. No prehistoric or historical archaeological resources were identified in the Project area. The closest known archaeological site is 1.5 km southwest of the Project parcel. Exh. Petitioner CK-2 at 3; tr. 2/5/10 at 139-40 (Knight).

177. Two small areas on the southwestern slope of Georgia Mountain were identified as archaeologically sensitive during field inspections. Exh. Petitioner CK-2 at 5.

178. One of the sensitive areas may be impacted by the Project's transmission line poles, line staging, and tree clearing. If the line follows the existing VASA trail corridor, there will be no impact on either archaeologically-sensitive area. Exh. Petitioner CK-2 at 5-6.

Discussion

GMCW's archaeological consultant recommends that the transmission line poles, line staging, and tree clearing remain within the VASA trail corridor to prevent disturbing a small archeologically-sensitive area. Therefore, GMCW shall locate the transmission line and clearing zone within the pre-existing VASA trail corridor to the extent possible as described on pages five through twelve of exhibit-Petitioner-CK-2.[73] When GMCW files the final design plans, it must demonstrate that, to the extent possible, the transmission line and clearing zone are located

73. GMCW must take adequate measures to ensure that the VASA trail either is not used, or the trail is clearly marked to indicate the existence of transmission poles.

within the pre-existing VASA trail corridor. If GMCW cannot locate the transmission line and clearing zone within the corridor, it must explain why it cannot meet this requirement.

Historic Sites

179. There are no properties listed on either the National or State Registers of Historic Places within the Project parcel. Therefore the Project does not directly impact any historic structures within its footprint. Exh. Petitioner CK-2 at 3.

180. There are no historic sites within a one-mile radius of the Project. Exh. Petitioner-LP-2 at 7-8.

181. There are twenty-five sites, located approximately 1.1 to 10 miles from the Project, that are important architectural resources and have the potential to be impacted by the proposed Project. Four sites were noted specifically: the Bouffard Martell Place; the Devino/Arrowhead Farm; 234 East Road; and the Brush Place. There are limited views of the Project from the historic properties within the ten-mile viewshed, including the four highlighted properties, due to distance, vegetation, topography, other buildings, and the direction the resources face. Exh. Petitioner-LP-2 at 8-22; Pritchett pf. at 3-4; Pritchett pf. reb. at 3-4.

182. The Project's impact on historic sites within the ten-mile viewshed will not be undue. The Project will not overwhelm or dominate the setting and characteristics that qualify the historic resources for listing in the State and National Registers, nor will it affect the ability of the public to interpret and appreciate these resources. Overall, the character of the significant landscape features and historic structures in Milton, Georgia, Fairfax, Westford, and the surrounding towns will not be substantially impacted by the Project. Pritchett pf. at 3-4; Pritchett pf. reb. at 3-4; exh. Petitioner-LP-2.

183. Most of the historic resources within the Project's three-mile viewshed will have only limited or distant views (over 1.5 miles) of the Project or will include another, more important, focal point in the background, such as Mount Mansfield. Exh. Petitioner-LP-2 at 7 and 11-22; Pritchett pf. at 3-4; Pritchett pf. reb. at 3-4.

184. The Project turbines, as proposed, will be visible from the Brush Place historic site. The house faces east toward the Project, but the topography and trees make it difficult to determine the exact visual impact. The Project's visibility from the Brush Place may be limited

to the turbines' rotor blade tips; however, even if half of the height of the turbines was visible (approximately 220 feet, which would include half of the turbines' tower height with the attached rotor blades) from the Brush Place, the impact to this historic site would not be undue. Tr. 2/5/10 at 122-125 and 130 (Pritchett); Pritchett reb. pf. at 4.

185. The Project turbines will not be readily visible from Main Street or adjacent streets in the Milton Falls Historic District due to topography, vegetation, and buildings that obscure distant views. Similarly, the cell tower on Georgia Mountain is not visible from the historic district. The district is approximately 2.25 to 2.75 miles from the Project. Exh. Petitioner-LP-2 at 12-13.

186. The Northwest Regional Plan acknowledges that the siting of wind generation may interfere with scenic, natural and historical resources, while recognizing the benefits of wind energy as a viable alternative to traditional sources of power. Zimmerman pf. at 27.

Discussion - Historic Sites

Jane Fitzgerald, an adjoining landowner, expressed concerns regarding the potential effect the Project will have on historic sites throughout Milton, including her residence, formerly known as the Brush Place, an historic site listed on the State Register, and the "gateway" intersection to the Milton Falls Historic District.[74] Mrs. Fitzgerald contends that the presence of the proposed Project's wind turbines on Georgia Mountain will dominate the landscape and have an undue adverse impact on historic resources within the Project's three-mile viewshed, including the Brush Place and the Milton Falls Historic District ("Milton Falls HD").

We utilize the three-part test articulated by the Environmental Board in its *Middlebury College* decision to evaluate the impacts on historic sites.[75] The first issue is whether resources, including the proposed project site and the Brush House, are historic sites. Pursuant to 10 V.S.A. 6001(9), an "historic site" includes resources placed on the National or State Registers of Historic Places ("Registers"). In this case, the Project site itself does not include any resources listed on the Registers, although the Brush Place and the Milton Falls HD are listed on the State

74. Exh. Petitioner-LP-2 at 8 and 12-13; Fitzgerald reb. pf. at 4.

75. *Amended Petition of UPC Vermont Wind, LLC*, Docket 7156, Order of 8/8/07 at 78 (citing *In re Middlebury College*, No. 9A0177-EB (V.E.B. Jan 26, 1990)).

Register.[76] In addition, thirteen of the fifteen sites identified as important historic resources by GMCW are listed on one of the Registers and are within the Project's three-mile viewshed.[77] In this case, therefore, at least thirteen properties within the three-mile viewshed,[78] including the Brush Place and the Milton Falls HD, are considered historic sites.

The second issue is whether the proposed project will adversely impact the historic sites. Adverse impacts include effects on the setting and landscape, "which are incongruous or incompatible with the site's historic qualities, including but not limited to . . . new visual, audible or atmospheric elements.[79] GMCW and the Landowner Intervenors agree that the Project will have, at a minimum, indirect visual impacts on several of the identified historic sites within the Project's three-mile viewshed.[80] In addition, GMCW's noise measurements showed that noise from the Project's operation would be audible to the west along North Road and at the Brush Place site.[81] The Landowner Intervenors argue that the Project will also have an adverse impact on the Milton Falls HD and the "gateway" to the Milton Falls HD at the four-way intersection of Westford, Main, East, and North Roads.[82] GMCW asserts that the Project, like the existing cell tower, will not be readily visible from the Milton Falls HD and that the "gateway" intersection has already been compromised by large residential developments at that location.[83] For the purpose of this analysis, we will assume that the Milton Falls HD is adversely affected by

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76. GMCW asserted that the previous loss of a 1920's barn on the Brush Place property has compromised the agricultural context of the property. However, no evidence was presented that the Brush Place has been de-listed as an historic site from the State Register. Pritchett reb. pf. at 3-4; Fitzgerald reb. pf. at 4.

77. Exh. Petitioner-LP-2 at 7 and 11-14.

78. We use a three-mile radius in our discussion of the impacts of the Project on historic sites because this distance was referenced by both the Landowner Intervenors and GMCW in their respective analyses of the Project's impact on historic sites. (*See* brief of the Landowner Intervenors at 12; exhibit Petitioner-LP-2 at 7 and 11-22).

79. *Amended Petition of UPC Vermont Wind, LLC*, Docket 7156, Order of 8/8/07 at 78 (citing *In re Middlebury College*, No. 9A0177-EB (V.E.B. Jan 26, 1990)).

80. Exh. Petitioner-LP-2 at 11-14 (stating that the Project would be visible from several of the historic sites within the Project's three-mile viewshed and that tops of the turbines' blades would likely be visible from the Brush Place).

81. Exh. Petitioner-KHK-2 at 11-13 and 17.

82. Tr. 2/5/10 at 123-27 (Pritchett).

83. Tr. 2/5/10 at 123-27 (Pritchett); exh. Petitioner-LP-2 at 12-13.

limited visibility of the Project from the district and direct visibility from the "gateway" intersection. Consequently, we find that the Project's aesthetics and noise will adversely impact several historic sites within the three-mile viewshed, including the Brush Place and the Milton Falls HD.

The final issue is whether the Project's adverse impacts on the historic sites are undue. Adverse impacts are considered undue when one of the following conditions is met:

> a. The failure of an applicant to take generally available mitigating steps which a reasonable person would take to preserve the character of the historic site.
>
> b. Interference on the part of the proposed project with the ability of the public to interpret or appreciate the historic qualities of the site.
>
> c. Cumulative effects on the historic qualities of the site by the various components of a proposed project which, when taken together, are so significant that they create an unacceptable impact.
> d. Violation of a clear, written community standard which is intended to preserve the historic qualities of the site.[84]

The first issue is whether GMCW took generally available mitigating steps to preserve the character of historic sites. As discussed within the aesthetics discussion, above, the Project cannot be completely mitigated because multiple 353- to 443-foot tall turbines will be set on a ridgeline at approximately 1200 to 1500 feet. However, as also discussed within the aesthetics discussion, GMCW has taken available mitigation measures to minimize the aesthetic impact of the Project, including using an existing access road, using light-colored Project components, limiting clearing, and placing electrical connections underground at the turbines. Therefore, we conclude that the Petitioner has taken reasonable steps to mitigate the aesthetic impacts of the Project on all resources, including historic resources.

The next issue is whether the Project interferes with the public's ability to interpret or appreciate the historic qualities of an historic site and whether the Project's cumulative effects create an unacceptable impact on the historic qualities of the site. Neither the Landowner Intervenors nor GMCW presented evidence that suggests any of the identified historic sites are designated as such because they have an important view of Georgia Mountain. Rather, the

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84. *Amended Petition of UPC Vermont Wind, LLC*, Docket 7156, Order of 8/8/07 at 79 (citing *In re Middlebury College*, No. 9A0177-EB (V.E.B. Jan 26, 1990)).

evidence suggests that the identified historic sites are so listed because of their architectural importance. Consequently, we must determine whether the public will be able to appreciate the architectural importance of the historic sites with the inclusion of the Project's potentially adverse effects. As noted above, the Project will not block the view of any historic resources.

With respect to the question of whether the cumulative effects of the Project on historic sites creates an unacceptable impact, the Landowner Intervenors contend that the Project will dominate the landscape for the historic sites within the three-mile viewshed. However, the evidence presented indicates that the majority of the historic resources located within three miles of the Project will have only limited views of the Project, or the view will be from a distance of more than 1.5 miles, or the view from the historic resource will include other, more important focal points than the Project area. Importantly, the Milton Falls HD "gateway" intersection's historical context has already been significantly compromised by the area's large residential developments.[85] We conclude that a three- to five-turbine wind generation project, located over two miles away, will have less impact on the historical context of the intersection than the inclusion of multiple modern residential developments. In addition, the views of the Project from the Milton Falls HD will be distant (over 2.25 miles) and will not affect a viewer's ability to appreciate the historical qualities of the buildings and the historical nature of the area. For these reasons, we conclude that the Project will not interfere with the ability of the public to interpret or appreciate the historic qualities of historic resources within the viewshed of the Project.

We next address the impacts of the Project on the Brush Place, the closest historic site to the Project. From the Brush Place, at most half the height of the turbines will be visible (approximately 220 feet) at a distance of 1.1 miles.[86] However, once installed the tips of the rotor blades may be the only Project components visible from the Brush Place. We conclude that the Project's impact from over a mile away will not adversely affect the historical quality of the Brush Place or the public's ability to appreciate its historical qualities.

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85. Tr. 2/5/10 at 123-24 (Pritchett).

86. Exh. Petitioner-LP-2 at 8; Fitzgerald reb. pf. at 4; tr. 2/5/10 at 122-125 and 130 (Pritchett); Pritchett reb. pf. at 4. GMCW did not provide definitive evidence as to whether, or how much, the Project will be visible from the Brush Place, however, they did acknowledge that "the tips of the turbines would likely be visible" from the site.

Given the limited impacts on the historic sites within the viewshed of the Project, we find that the Project will not overwhelm or dominate any historical resources' views so as to alter the characteristics that qualified them for listing on the Registers, nor will the Project affect the ability of the public to interpret and appreciate these resources.[87] Finally, we find that any potentially adverse noise impacts will be mitigated by the conditions included above in the noise discussion.[88] Thus, we conclude that cumulative impacts of the Project will not create an unacceptable impact on historic resources in the vicinity of the Project.

The final issue is whether the Project violates a clear, written community standard which is intended to preserve the historic qualities of an historic site.[89] The Landowner Intervenors contend that the Milton Town Plan contains provisions that constitute clear, written community standards that would be violated by the Project. Specifically, the Landowner Intervenors cite to a portion of the Milton Town Plan that states the four-way intersection of Westford-Main-East and North Road provides a "dramatic gateway" to the historical center of town. As discussed within the aesthetics analysis, the Milton Town Plan encourages the protection of historic resources within the town, but also encourages the development of renewable wind energy. We read these two types of provisions, in conjunction, as the town's attempt to ensure that wind generation projects are sited to minimize Project impacts on aesthetic resources, including historic sites. We do not interpret these provisions as a prohibition against developing a ridgeline wind generation project, which contains historic resources within its viewshed. It is true that the Project will be visible from historic resources in the host towns and the surrounding area. However, the intrusion into the scenic landscape will be indirect or minimal from most historic sites due to the mitigating factors discussed above. Thus, the Project does not violate a clear, written community standard which is intended to preserve the historic qualities of historic sites. Therefore, we conclude that the Project will not have an undue adverse effect on the historic properties within the Project's three-mile viewshed.

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87. Pritchett pf. at 3-4; Pritchett pf. reb. at 3-4; exh. Petitioner-LP-2.

88. *See* Noise Discussion below Finding 174.

89. We will not discuss the third Middlebury question because the Project site does not include an historic site.

Rare and Irreplaceable Natural Areas

[10 V.S.A. § 6086(a)(8)]

187. The Project will not have an undue adverse impact on rare and irreplaceable natural areas. This finding is supported by Findings 188–204, below.

188. Five upland plant communities were identified within the study area: Northern Hardwood Forest; White Pine-Red Oak-Black Oak Forest; Dry Oak Hickory-Hophornbeam Forest; Mesic Red Oak-Northern Hardwood Forest; and Hemlock Forest. Exh. Petitioner AE-2 at 7.

189. The Dry Oak-Hickory-Hophornbeam Forest and the White Pine-Red Oak-Black Oak Forest are both considered uncommon and occur in small areas on Georgia Mountain. Sorenson pf. at 6.

190. Mesic Red Oak-Northern Hardwood Forest and Northern Hardwood Forest are widespread and common, respectively, and occupy, collectively, approximately 2,000 acres on Georgia Mountain. Sorenson pf. at 7-8.

191. Hemlock Forest is considered widespread in Vermont and occupies approximately 37 acres on Georgia Mountain. Exh. Petitioner AE-2 at 8.

192. The association of natural communities found at the Georgia Mountain site is more often found in the southwestern portion of Vermont. Tr. 2/10/10 at 134 (Lew-Smith); tr. 2/10/10 at 208 (Sorenson).

193. The Project will not impact any rare or irreplaceable natural areas. Exh. AE-2 at 7.

194. Current development pressure and past clearing for agriculture has reduced the extent of natural sites such as Georgia Mountain dramatically within the Lake Champlain biophysical region. Sorenson pf. at 9.

195. Existing and permanent habitat fragmentation on Georgia Mountain is primarily limited to the cellular phone tower and its access road. Sorenson pf. at 9.

196. Within this relatively unfragmented habitat, all the components of a healthy, functioning, and adapting natural community are expected to occur, including: native plants characteristic of each natural community type; ecological processes that influence plant distribution; soil development; and hydrology. Sorenson pf. at 9.

197. Fragmentation alters interior forest wildlife habitat, impairs movement of some wildlife species, changes natural ecological processes such as surface water drainage and the susceptibility of trees to blowdown by high wind events, and increases the likelihood of introducing non-native, invasive plant species. Exh. ANR Cross-Sorenson-5.

198. The creation of access roads, including clearing associated with road construction, will fragment the natural communities on or near the summit of Georgia Mountain and have a significant impact on these communities. Tr. 2/10/10 at 164 (Sorenson).

199. The permanent impacts of the Project are more severe than the temporary effects of logging activity and ATV trails. Tr. 2/10/10 at 183 (Sorenson).

200. Alterations that affect key natural processes and are likely to be permanent are damaging to the ecological integrity of the natural community. Exh. ANR-Cross-10 at 6.

201. The impacts of the Project are permanent. Even with restoration at the end of the Project's life, it is very difficult to restore natural communities to their pre-disturbance condition. Construction of the Project requires blasting down into bedrock, which alters the hydrology of the mountain. In addition, filling the area to replace grades after the Project is decommissioned creates very different soil conditions than existed prior to construction. The Mesic-Red Oak-Northern Hardwood forest cannot be restored. Tr. 2/10/10 at 183, 186-187 (Sorenson).

202. Road construction along mountain slopes is expected to alter colluvial action — the natural downslope movement and accumulation of rich topsoil and nutrients that is primarily responsible for creating enriched forests on lower mountain slopes. Sorenson pf. at 14.

203. The scale of road construction and clearing will increase the risk of introducing non-native invasive species into the natural communities on Georgia Mountain. Invasive species are aggressive colonizers of bare soils that have been exposed by construction or erosion, especially if there is also abundant sunlight from canopy removal. Sorenson pf. at 14-15.

204. The introduction of non-native invasive species can result in adverse impacts to forest habitat. The risk of invasive species is greater in the Champlain Valley biophysical region than in other areas of the state. It is important to monitor and control invasive species areas impacted by the Project. Tr. 2/10/10 at 113-114 (Lew-Smith).

Discussion

ANR contends that the Project will have an undue adverse impact on a rare and irreplaceable natural area ("RINA") without appropriate mitigation. ANR states that, while individual community types occurring on Georgia Mountain may not all constitute RINAs, the assemblage of communities, combined with the importance of a relatively unfragmented and intact natural community, within heavily developed Chittenden County, warrants RINA designation. ANR further contends that the 45 acres of clearing associated with Project roads, transmission line, and turbine areas, will directly impact the RINA through changes to natural processes such as groundwater and soil movement.

ANR recommends, as mitigation for the Project's impacts on the RINA, that the Board require a permanent conservation easement to protect the remaining natural communities on the summit of Georgia Mountain. Additionally, ANR recommends that GMCW be required to monitor and control for invasive species, as the clearing and soil disturbance associated with the Project create ideal conditions for the spread of non-native invasive species. Finally, ANR recommends that GMCW be required to restrict ATV access to one or two corridors along the edges of the mountain and that the existing ATV trails around the summit of Georgia Mountain be discontinued, allowed to revegetate, and be monitored for invasive species.

GMCW contends that the natural communities present on Georgia Mountain, individually, do not constitute a RINA, and that ANR's contention that the association of natural communities constitute a RINA is a "novel theory." Further GMCW asserts that, due to the existing impacts to Georgia Mountain such as the telecommunications tower, commercial logging, and all-terrain vehicle trails, Georgia Mountain does not constitute a contiguous natural area. Finally, GMCW states that there is no standard in Section 248 that allows the imposition of controls on invasive species.

Section 248(b)(5) requires that we determine whether the Project will have an undue adverse impact on the natural environment, with due consideration to certain Act 250 criteria, including 10 V.S.A. § 6086(a)(8), impact on rare and irreplaceable natural areas. Accordingly, to make our determination under Section 248(b)(5), we do not need to simply address the issue of whether the Project site is a rare and irreplaceable natural area, but we must also address whether the Project will have an undue adverse impact on the natural environment.

The existing condition of Georgia Mountain, including the ATV use and the presence of the cell tower, combined with the fact that none of the natural communities identified on the mountain, by themselves, would qualify as rare and irreplaceable, lead us to conclude that Georgia Mountain does not qualify as a rare and irreplaceable natural area. However, while the existing natural communities may not rise to the level of rare and irreplaceable, the significant and permanent impacts to the natural communities on Georgia Mountain lead us to conclude that GMCW must mitigate the impacts of the Project on the natural communities in order to avoid an undue adverse impact on the natural environment.

ANR is requesting that the Board require a permanent easement on the property on which the Project is located. GMCW had offered to place a temporary easement on portions of the property, that would last throughout the life of the Project. ANR has presented ample evidence that the Project will have a permanent impact on the natural communities, including the Mesic-Red Oak forest. Accordingly, we conclude that a permanent easement on the sensitive portions of the property is appropriate. However, there is insufficient information to determine the extent of such an easement. Both ANR and GMCW agree that certain community types are more common than others, although ANR contends that the entire assemblage of communities is a state significant site. We are not convinced that all of the natural communities within the Project area require permanent protection — we note that there is no evidence that Northern Hardwood forest, which occurs within the Project area, will be permanently altered by the Project.

We require GMCW to file a proposal, for Board approval, for conserving the Project area. Such a proposal may contain both permanent easements that will endure beyond the life of the Project, and easements that are in effect only during the life of the Project. Parties will have the opportunity to comment on the proposal and the Board must approve the proposal before construction on the Project can commence.

With respect to ANR's request that we require GMCW to develop a monitoring and control plan for non-native invasive species, ANR has presented sufficient evidence to indicate that the impacts associated with development of the Project are sufficient to require mitigation to ensure that the Project will not have an undue adverse impact on the natural environment pursuant to Section 248(b)(5). Accordingly, we require GMCW to develop a monitoring and control plan for non-native invasive species. As ANR has proposed, the plan should cover a ten-

year period, but should also be adaptable in terms of whether invasive species have been identified within a given time period following construction.[90]

Wildlife, Including Necessary Wildlife Habitat and Endangered Species

[10 V.S.A. § 6086(a)(8)(A)]

205. The Project will not have an undue adverse effect on wildlife, with the mitigation discussed in this section. This finding is supported by Findings 207–250, below.

Black Bears

206. The Project will not have an undue adverse impact on black bears. This finding is supported by Findings 207–214, below.

207. The Project area does not contain any significant, "necessary black bear habitat" and lacks high quality black bear habitat elements that would support local bear or attract bear from a distance. The Project area provides marginal habitat likely utilized, in combination with other larger forested blocks, by approximately one to two local bears. Exh. Petitioner-AE-2 at 17-20; Austin pf. at 7; tr. 2/8/10 119-121 (Austin); tr. 2/8/10 at 52-57 (Parsons).

208. The Project area does not have a large enough forested block to support a reproductive bear population. Tr. 2/8/10 at 56-57 (Parsons).

209. The State of Vermont Bear Points GIS layer does not indicate the presence of mast stands, bear crossings, or travel corridors in the Project area. Exh. Petitioner-AE-2 at 19; Austin pf. at 7; Lew-Smith/Parson reb. pf. at 4.

210. The Project's wetlands were assessed and showed no bear use or bear presence. Exh. Petitioner-AE-2 at 20; Austin pf. at 7.

211. The Project's clearing zone was assessed and less than ten bear-scarred beech trees were observed scattered on the properties and very limited evidence existed of bear use of oak. Exh. Petitioner-AE-2 at 19; tr. 2/8/10 at 57 and 60 (Austin).

212. The Project includes features that will mitigate the potential negative impacts on bear habitat including limited vehicular traffic during operation and gravel roads. Tr. 2/8/10 at 54-55 (Parsons).

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90. Tr. 2/10/10 at 193 (Sorenson).

213. The Project is not utilized enough by black bear to have an impact on bear population. Lew-Smith/Parson reb. pf. at 4.

214. The Project, as proposed, will not impact significant black bear habitat. Austin pf. at 7.

Discussion

ANR and GMCW agree that the Project site does not offer necessary black bear habitat. Field investigations showed little to no presence of black bear populations within the Project properties.[91] ANR, however, contends that the Project will further fragment the Project properties and result in the loss of interior forest habitat important for the health and welfare of bear populations as well as other wildlife species.[92] Although it is possible that bear may pass through the Project area on a seasonal basis, there is no testimony indicating that bears rely on resources such as wetlands or trees that provide hard mast, such as beech or oak, within the vicinity of the Project. Accordingly, we find that the Project will not have an undue adverse impact on bear habitat.[93]

Birds

215. The Project will not have an undue adverse impact on birds due to collision with turbines, habitat loss, habitat fragmentation, or habitat avoidance, with the conditions imposed in this Order. This finding is supported by Findings 216–224, below.

216. Thirty-six species of breeding birds were observed at the Project site. Six species common to Northern Hardwood forest comprised 52% of the birds observed. Most of the species observed nested in mature forest habitat and 15% of the birds observed were considered edge species. Renfrow pf. at 3.

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91. Exh. Petitioner-AE-2 at 19-20; Lew-Smith/Parson reb. pf. at 4; tr. 2/8/20 at 48-49 (Parsons).

92. Austin pf. at 7.

93. ANR argues that the Project will result in fragmentation and loss of interior forest habitat that is important for the health and welfare of the bear population and asserts that the fragmentation could be mitigated through long-term conservation and stewardship of GMCW's larger property. Austin pf. at 7-8. As noted above, we require GMCW to place portions of the Project area under easement.

217. Ten species (28%) are listed as species of greatest conservation concern in Vermont and/or within the Bird Conservation Region (BCR). Austin pf. at 17.

218. Certain factors can lead to increased collisions with wind turbines, including birds migrating at night that encounter low cloud cover, fog, or precipitation and consequently fly at lower altitudes. Austin pf. at 12.

219. Bird fatalities have been documented for many years at wind facilities throughout the country. Austin pf. at 12.

220. Birds migrating at night that encounter low cloud cover, fog, or precipitation, as is often the case in Vermont during the fall, will fly at lower altitudes. The variation in flight height creates an added risk of collision with tall structures such as wind turbines. Austin pf. at 12.

221. Two species found on the Project site, the Common Raven and the red-shouldered Hawk routinely fly above the treeline during breeding season. The variation in flight height creates an added risk of collision with tall structures such as wind turbines. Exh. Petitioner RBR-2 at 8.

222. Post-construction mortality survey data is essential for understanding the full scope of impacts associated with the project and for identifying opportunities to mitigate those effects through on-going monitoring, habitat management and enhancement, improved siting of wind energy facilities and possible operational adjustments. Austin pf. at 11.

223. Details regarding the number of days searched per week and the number of turbines searched per day should be addressed in the detailed post-construction monitoring plan. Austin pf. at 14.

224. The scientific community has not conducted many rigorous and controlled studies examining the impacts of wind turbines on breeding birds pre- and post-construction. Exh. Petitioner RBR-2 at 2; tr. 2/5/10 at 82 (Renfrow).

Discussion

ANR asserts that further forest fragmentation will result in negative impacts on some species and a decrease in interior forest birds. In addition ANR contends that there is insufficient information regarding the potential impact of the Project on migrating birds. To address these concerns, ANR proposes the following conditions:

At least two years of post-construction radar and mortality monitoring surveys.

Post-construction bird mortality surveys should be conducted in accordance with a detailed mortality survey protocol that has been developed in coordination with ANR and has been reviewed and approved by ANR.

All post-construction mortality surveys should be conducted in a fashion that provides statistically reliable samples and associated estimates of bird and bat mortality (including regular scavenger rate tests).

GMCW should reclaim and restore any Project areas that are disturbed during construction.

With respect to the impacts of fragmentation on interior forest bird species, earlier in this Order we imposed a requirement on GMCW to propose a conservation plan for the Project area that would include additional protection of areas through easements. The protection afforded by a conservation easement will also provide greater protection for interior forest bird species. Accordingly, we require GMCW to reclaim and restore any Project area that is disturbed during construction but is not required to remain open (such as necessary stormwater structures).

We have consistently required developers of wind generation facilities to conduct bird mortality studies. We find that there is sufficient evidence to demonstrate that such a requirement is necessary to ensure that the Project does not have an undue adverse impact on the natural environment. However, ANR has not provided sufficient evidence to indicate that a radar study is required in addition to the mortality study. Additionally, we do not require GMCW to obtain approval from ANR for the bird mortality plan prior to submitting the plan to the Board for approval, although we recommend that GMCW work with ANR in the development of the plan. For the reasons stated above, we direct GMCW to file a proposed bird mortality plan for review by parties and approval by the Board. The plan must include two years of post-construction bird mortality monitoring.

Bats

225. The Project will not have an undue adverse impact on bats, with the conditions imposed in this Order. This finding is supported by Findings 226–240, below.

226. There are nine species of bats in Vermont. Six of the species hibernate in caves and mines ("cave-dwelling bats") during the winter and migrate to their summer range in the spring. The migrations of these species vary from a mile to a few hundred miles. The remaining three species are long-distance migrants that migrate out of the Northeast in late summer and early fall, spend the winter months further south, and return to Vermont in late spring. Darling pf. at 7.

227. Vermont's climate results in lower bat populations than in the lower latitudes of North America and, as a result, Vermont bat populations are more vulnerable to added mortality factors. Darling pf. at 8.

228. Vermont's bat species are long-lived (i.e., twenty years or more) and have very low reproductive potential. Bats generally give birth to only one young per year. Migratory tree bats often give birth to two young per year, but migrating long distances likely increases the species' annual mortality rate. Darling pf. at 8.

229. There is considerable uncertainty regarding Vermont's bat populations, particularly the migratory tree bats that are most vulnerable to collisions with commercial-scale wind projects. Darling pf. at 8.

230. White Nose Syndrome has put all six Vermont cave-dwelling bat species' populations at risk. Vermont has lost as many as 400,000 cave-dwelling bats within the past two years. Darling pf. at 9-12 and 24.

231. Utility-scale wind turbines on Eastern ridgelines have shown high bat fatality rates; for example bat mortality at a site in Tennessee was approximately 64 bats per turbine per year. Darling pf. at 10-11.

232. Migratory tree bats comprise the majority (nearly 75%) of the mortality at Eastern ridgeline wind generation sites. The cave-dwelling bats most likely to be affected include the little brown bat, the big brown bat, and the tri-colored bat. Of these, the little brown bat and the tri-colored bat have been significantly impacted by White Nose Syndrome. Darling pf. at 10-13.

233. A habitat assessment found suitable roosting habitat sites for the state threatened small-footed bat within the foraging distance (three miles) of the Project area. Small-footed bats may be affected by turbine collisions. Exh. ANR-Darling-2 at 3; Austin pf. at 8-9 and 17-18.

234. Bat fatality levels at any given site are difficult to predict, but mortality appears to increase with an increase in turbine heights. Researchers are unsure about why bats are not able to avoid turbines, but some suggest that migratory bats may view turbines as roost trees. Tr. 2/5/10 at 79 (Gruver); Darling pf. at 11-12.

235. Most bat fatalities occur in summer and early autumn. Darling pf. at 26.

236. Further evaluation of the small-footed bat's potential roosting sites would need to include post-construction monitoring during the month of June. Darling pf. at 18.

237. Post-construction bat-fatality monitoring is conducted at almost every wind power facility. Tr. 2/5/10 at 97 (Gruver).

238. Operational adjustments of wind turbines to reduce bat fatalities may include date-specific shut-down periods or limitations on operation of the turbines during specific wind and temperature regimes that post the greatest threat of bat fatalities. Darling pf. at 31.

239. Operational controls on wind turbines reduce bat fatalities. Studies indicate that increasing the cut-in speed of the turbine rotors can reduce bat fatalities by approximately 50%. Darling pf. at 34-35.

240. Operational adjustments can be implemented with little impact on energy production. An experiment in Pennsylvania indicated that operational adjustments resulted in reductions of 0.3% to 11% energy production during a 76-day period, depending on the increase in cut-in speeds. Darling pf. at 35.

Discussion

ANR has previously recommended that the Board impose bat-fatality thresholds that would trigger operation adjustments. In this Docket, ANR asserts that undue adverse impacts on bat populations would be occurring and should be addressed when estimated bat fatalities from the period July 1 through September 30 at the Project exceed: 0.0 threatened and endangered bat species (Indiana bat or small-footed bat); or 3.0 migratory bats per turbine (combination of red bat, horary bat, and silver-haired bat); or 5.0 bats per turbine of other species (combinations of little brown bat, big brown bat, northern long-eared bat, and tri-colored bat).

In Docket 7250, the Board declined to impose such thresholds, stating:

> Given the uncertainties contained in these assumptions [used to develop the bat fatality thresholds], we determined that there was not sufficient basis to adopt

> ANR's proposed thresholds. Further, the testimony from ANR and Deerfield indicates that the science regarding bat mortality due to wind turbines continues to evolve, but there is growing consensus that operational adjustments during certain periods can significantly reduce mortality levels. Given these factors, we found that the best course of action was to require Deerfield to work with ANR to determine an appropriate adaptive management regime that would minimize bat mortalities.[94]

ANR has provided sufficient evidence to demonstrate that bat fatalities are a significant concern and should be mitigated. However, as we found in Deerfield, the appropriate mitigation for bat mortality is operational adjustment of the wind project to shut down turbines during conditions when bat fatalities are more likely to occur. Bat-mortality events can be significantly reduced by such adjustments, and there is sufficient evidence to demonstrate that such adjustments will have little impact on the resulting energy output from the Project.

We require the Petitioner to file, prior to construction, a plan to incorporate adjustments to the Project's operations to minimize bat fatalities. In addition, we require two years of post-construction bat mortality studies to ensure that the operational adjustments are functioning properly and to inform whether additional adjustments are appropriate. ANR has requested that three years of post-construction mortality studies, during the period June 1 through July 31, be conducted to monitor the effect of the Project on the small-footed bat, classified as a threatened species by the state. Given the limited duration of the study period and the status of the small-footed bat, we also require GMCW to conduct such studies.

Finally, ANR recommends that the Board impose the following conditions related to bat mortality studies:

> Require that post-construction monitoring studies be conducted by a third party having the necessary experience as approved by ANR.
>
> Require permission be granted to ANR to access the project area during the post-construction monitoring.
>
> Require GMCW to hand over all bat carcasses to ANR for species verification and research.
>
> Require that the results of post-construction monitoring studies be prepared and made available to ANR within 90 days of the end of data collection.

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94. Docket 7250, Order of 7/17/09 at 9.

We adopt these conditions, with one modification — GMCW must propose for Board approval a third party to conduct the post-construction monitoring studies; ANR will have the opportunity to comment on the proposed selection by GMCW, but does not have the authority to approve GMCW's selection.

Other Wildlife Species

241. The Project site is not located within an area where moose would tend to spend the winter months. Moose winter habitat was not identified by GMCW at the Project site. Therefore, moose winter habitat is not a concern at this site and the Project will not impact moose winter habitat. Austin pf. at 9.

242. White-tail deer are common throughout the area. The Project property includes growing-season deer use throughout the Project area as evidenced by spring and summer deer scat and browse. Exh. Petitioner-AE-2 at 18-19.

243. The Project area contains two natural communities that offer deer over-wintering habitat. Deer over-wintering habitat is important for winter survival of deer. Tr. 2/8/10 at 175 (Austin); exh. Petitioner-AE-2 at 18-19.

244. One winter deeryard is mapped on the Vermont Fish and Wildlife's digital deeryard layer and two winter deeryards were field confirmed. The mapped and field-confirmed winter deeryards are located, at the closest point, 400 feet from the Project's proposed collection line and over 750 feet from any of the proposed Project activities. Exh. Petitioner-AE-2 at 18-19.

245. The Project will not impact deer over-wintering habitat because the Project is far enough removed from the two Project area deeryards. Austin pf. at 6; tr. 2/8/10 at 121 and 175 (Austin).

Discussion

Transmission line installation often occurs during the winter months. However, the Project's proposed transmission lines and associated construction activities are located far enough from over-wintering white-tail deer habitat to mitigate any potentially negative impacts. Therefore, we find that the Project will not have an unduly adverse impact on white-tail deer.

Other Rare, Threatened, and Endangered Species

246. The Project will not have an undue adverse impact on rare, threatened, and endangered species. This finding is supported by Findings 247–250, below.

247. GMCW conducted an inventory for rare, threatened, and endangered species in the Project area. Exh. Petitioner-AE-2.

248. No state or federally listed rare, threatened, or endangered animal species were discovered during the inventory. Exh. Petitioner-AE-2 at 23.

249. No state or federally listed rare, threatened, or endangered plant species ranked S1 or S2 were discovered during the inventory. Exh. Petitioner-AE-2 at 23.

250. Nongame and Natural Heritage Program ("NNHP") previously recorded three rare plants within the Project's study area: Bronze Sedge (*carex foenea*); Autumn Coralroot (*corallorhiza odontohiza*); and Stout Goldenrod (*solidago squarrosa*). However, none of these species were recorded within the Project's clearing zone. Exh. Petitioner-AE-2 at 23.

Development Affecting Public Investments

[10 V.S.A. § 6086(a)(9)(K)]

251. The Project will not unnecessarily or unreasonably endanger the public or quasi-public investment in public facilities, services, or lands, or materially jeopardize or interfere with the function, efficiency, or safety of, or the public's use or enjoyment of or access to public facilities, services, or lands. Zimmerman pf. at 35.

252. The Project site and access will be located completely on private land owned by the Harrison family and Green Crow, LLC, a forest products company. Exh. Petitioner-JH-1 at 1; Zimmerman pf. at 35.

253. The Project will be visible from several public roads and state parks. Exhs. DPS-JV-1 at 21 and Petitioner-DR-2 at 4; Raphael pf. at 5.

254. The Project will not have an adverse impact on aesthetics or historic sites on public lands or facilities. *See* Findings 140–162 and 176–186, above (aesthetics and historic sites).

255. The Project will not have an undue adverse impact on natural resources on public lands, if the conditions set forth in this Order are implemented. *See* Findings 85–250, above (outstanding water resources through wildlife).

Least-Cost Integrated Resource Plan

[30 V.S.A. § 248(b)(6)]

256. The Project will be a merchant plant as opposed to a regulated utility, therefore GMCW is not required to prepare a least-cost integrated resource plan. Foley pf. at 8-9.

Discussion

GMCW is not required to prepare a least-cost integrated resource plan.[95] Accordingly, this criterion does not apply to the Project.

Compliance with Electric Energy Plan

[30 V.S.A. § 248(b)(7)]

257. The Project complies with the *Vermont Twenty-Year Electric Plan*. Zimmerman pf. at 33; Foley pf. at 9; findings 258-260, below.

258. The Twenty-Year Electric Plan supports renewable energy development to diversify Vermont's power portfolio and to allow the state to move away from large fossil-fuel-based power sources. Zimmerman pf. at 33; Foley pf. at 9.

259. Chapter Five of the *Twenty-Year Electric Plan* speaks to the importance of a sustainable resource portfolio in Vermont, the necessity of looking at the long-term benefits derived from renewable energy, and specifically includes a section devoted to wind resources. Zimmerman pf. at 33; Foley pf. at 9.

260. On June 4, 2010, the Department of Public Service filed its determination that the Project complies with the *Twenty-Year Electric Plan*. Letter of June 4, 2010, from James Porter, Esq., to Susan M. Hudson, Clerk of the Board.

Outstanding Resource Waters

[30 V.S.A. § 248(b)(8)]

261. The Project is not located near any outstanding resource waters. Exh. Petitioner-AE-2 at 30.

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95. *See* 30 V.S.A. § 218c(a).

Waste-to-Energy Facility

[30 V.S.A. § 248(b)(9)

262. The Project does not involve construction of a waste-to-energy facility. Therefore, this criterion is inapplicable.

Existing or Planned Transmission Facilities

[30 V.S.A. § 248(b)(10)]

Findings

263. As conditioned in this Order, the Project can be served economically by existing or planned transmission facilities without undue adverse effect on Vermont utilities or customers. This finding is supported by Findings 264-268, below.

264. The CVPS feasibility study concluded as follows:

> As proposed, the Georgia Mountain Wind Farm Generation project is feasible with respect to voltage, thermal, and short circuit constraints identified in this study. There were thermal constraints identified as a direct result of the project. However, since they can be mitigated via limited system upgrades, these constraints do not impact the system so severely that the project's feasibility is in doubt.

Exh. Petitioner-Supp-2.

265. The feasibility study most likely captures most of the upgrades needed to reliably interconnect the Project, and the feasibility study addresses most of the relevant issues. However, the scope of the feasibility study did not include examination of stability issues and did not include the actual parameters of the final turbines to be installed. Tr. 2/10/10 at 292-293 (Jordan); exh. Petitioner-Supp-2.

266. A final system impact study ("SIS") should be conducted after the turbines are selected and the operating characteristics of the selected turbines are known. Tr. 2/10/10 at 284, 290 (Jordan).

267. The SIS would contain recommendations for any necessary upgrades to the interconnecting system, including installation of any necessary protective equipment, that must be undertaken to ensure system stability and reliability. If all necessary upgrades identified in the SIS and in the feasibility study are implemented, the Project will not have an adverse impact on system stability and reliability. Tr. 2/10/10 at 286, 289 (Jordan).

268. GMCW will be responsible for the cost of upgrades needed to interconnect the Project with CVPS's transmission system. Zimmerman and Estey supp. reb. pf. at 3.

VII. GENERAL GOOD OF THE STATE

[Section 248(a)]

Pursuant to Section 248(a)(2), no company or person may begin site preparation for, or commence construction of, a generation facility unless the Board first finds that such generation will promote the general good of the state and issues a certificate of public good to that effect. While Section 248(b) requires that the Board find that any generation project meet specific criteria spelled out in the statute in order to issue a CPG, the Board must also determine, pursuant to Section 248(a), that the project promotes the general good of the state. As this Board has previously explained:

> In essence the factors enumerated in subsection (b) are "conditions precedent to the ultimate conclusion that a proposal is consistent with the general good of the state, rather than being full proof of that conclusion. In other words, they are necessary, but they may not be sufficient.[96]

In this Order, we make positive findings under each of the criteria of Section 248 while at the same time recognizing the potential adverse impacts of the Project. This includes an affirmative finding that the Project provides an economic benefit to the State of Vermont, as required by Section 248(b)(4), through employment and tax revenues. However, Section 248(b) only requires that we find that the Project provides an economic benefit. Pursuant to Section 248(a) we must determine whether the Project will promote the general good of the state; in making this determination, we consider whether the benefits of the Project outweigh the impacts.

To support such a determination, the Department recommends that the Board require GMCW to make good-faith efforts to enter into power purchase agreements with Vermont utilities. In two prior cases involving wind generation facilities, we found that the projects would not provide sufficient benefit to the general good of the state absent the developers

96. Docket 5330, Order of 10/12/90 at 46.

entering into stably priced power purchase agreements with Vermont utilities for a substantial portion of the Project output.[97]

The Vermont General Assembly has set out certain policy goals to be achieved by renewable energy in 30 V.S.A. § 8001:

> (a) The general assembly finds that it is in the interest of the people of the state to promote the state energy policy established in section 202a of this title by:
>
> (1) Balancing the benefits, lifetime costs, and rates of the state's overall energy portfolio to ensure that to the greatest extent possible the economic benefits of renewable energy in the state flow to the Vermont economy in general, and to the rate paying citizens of the state in particular.
>
> (2) Supporting development of renewable energy and related planned energy industries in Vermont, in particular, while retaining and supporting existing renewable energy infrastructure.
>
> (3) Providing an incentive for the state's retail electricity providers to enter into affordable, long-term, stably priced renewable energy contracts that mitigate market price fluctuations for Vermonters.
>
> (4) Developing viable markets for renewable energy and energy efficiency projects.
>
> (5) Protecting and promoting air and water quality by means of renewable energy programs.
>
> (6) Contributing to reductions in global climate change and anticipating the impacts on the State's economy that might be caused by federal regulations designed to attain those reductions.[98]

Wind projects, such as the one proposed by GMCW, contribute towards diversifying the state's energy portfolio, help to reduce global climate change caused by CO2 emissions, and protect air quality.[99] However, absent long-term stably priced[100] power contracts with

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97. *See* Petition of UPC Wind, Docket 7156, Order of 8/8/07 at 35-36; and Petition of Deerfield Wind, Docket 7250, Order of 4/16/09 at 42-44.

98. 30 V.S.A. § 8001.

99. *See,* Docket No. 7156, Order of 8/8/07 at 38; Docket No. 7250, Order of 4/16/09 at 42.

100. One definition of the term "stably priced" would include a contract with a fixed price over the term of the contract (that could include adjustments for inflation), although this would constitute only one example. Other examples include (1) an indexed contract with price collars such that the price does not fall below or rise above certain amounts and (2) a fixed-price contract with a low market adjuster, such as the power purchase agreement reviewed in the sale of the Vermont Yankee Nuclear Power Station to Entergy Nuclear Vermont Yankee, LLC. *See*

Vermont's electric distribution utilities, the Project does not provide the economic benefits associated with renewable projects, recognized by the state policy goals.

From an economic perspective, one of the primary benefits of wind power is that the fuel source is free. Consequently, the majority of the costs of the Project are capital and maintenance, costs that are generally predictable. By comparison, gas-fired generation units have fuel costs that can vary considerably over time, in addition to the capital and maintenance costs. Without long-term stably priced contracts, the Project fails to capture a primary benefit of wind generation facilities — price stability.

In this Order, we make positive findings under each of the criteria of Section 248 while at the same time recognizing the potential impacts of the Project, not the least of which are the impacts on the natural environment. This includes an affirmative finding that the Project provides economic benefits through employment and tax revenues. But we must also make a determination as to whether the Project promotes the general good of the State under Section 248.

To ensure sufficient benefit, this Order conditions our approval of the Project on GMCW entering into one or more contracts with a Vermont utility or utilities. We would expect these contracts to have three basic features; they should be stably priced, have prices favorable relative to market purchases, and collectively, comprise a substantial portion of the output of the facility.

We recognize that in adopting such a condition, GMCW will be in a different negotiating status than if no such conditions were imposed. As a result, Vermont utilities that wish to negotiate with GMCW for a portion of the Project's renewable power should remain aware that the Board has the authority to investigate any unwillingness to enter into reasonable power contracts. Indeed, it is in the interest of Vermont utilities to enter into such contracts to meet the Legislature's SPEED requirement that Vermont meet incremental load growth, and a minimum of 10% of the load, through renewable energy.[101] Under the proposed conditions, if an agreement between GMCW and the utilities cannot be reached after conducting negotiations in good faith, GMCW may file a statement with the Board explaining why it cannot reach an

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Docket 6545, Order of 6/13/02.

101. 30 V.S.A. § 8005.

agreement and why the Board should modify or remove this requirement. In the event that this does occur, the Board will examine the issues and weigh its options at that time. In any case, we will require that GMCW provide us with an update of the status of negotiations with Vermont utilities 90 days after the date of this Order.

As a further incentive to GMCW to enter into stably-priced power contracts with Vermont utilities, and as we provided for in our decision in UPC Vermont Wind and Deerfield Wind, we link this issue with the issue of the decommissioning fund for the Project by requiring a trigger for decommissioning review. That is, in the event that the actual output of the Project falls below 65% of the project output over a two-year period, the Board will initiate a decommissioning review. However, if GMCW can demonstrate that it has entered into such contracts, in compliance with the aforementioned conditions of this Order, the Board may find that the benefit to the state from the Project is sufficient enough to allow for a reduction in the decommissioning trigger to as low as 50% if a substantial amount of power is sold to Vermont utilities at stable prices.

VIII. DECOMMISSIONING FUND

Findings

269. GMCW will develop a Decommissioning Plan ("Plan") in collaboration with the chosen wind turbine supplier. Zimmerman pf. at 36.; Zimmerman reb. pf. at 8; Foley pf. at 10.

270. GMCW will offer a Plan similar to those previously approved by the Board for commercial-scale wind generation projects.[102] Zimmerman reb. pf. at 9.

271. GMCW will submit the Plan to the Board for approval prior to commencement of construction. Zimmerman pf. at 36.

272. GMCW's decommissioning plan will call for the establishment of a Decommissioning Fund ("Fund"), to be funded by a Letter of Credit or other appropriate financial security. Zimmerman reb. pf. at 9; *see* Foley pf. at 10.

273. Upon decommissioning, the Project site will be restored to pre-construction conditions to the extent practical. Zimmerman reb. pf. at 9.

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102. *See Amended Petition of Deerfield Wind, LLC*, Docket 7250, Order of 4/16/09 at 91-96; *Amended Petition of UPC Vermont Wind, LLC*, Docket 7156, Order of 8/8/07 at 107-111.

274. The Fund should be adequately funded to ensure that the Project site returns to its pre-construction condition and reestablishes a stable forest community after the generation facility ceases to be used for commercial production. Foley pf. at 10; tr. 2/10/10 at 38 (Brunswick); tr. 2/10/10 at 210-11 (Sorenson).

275. The Fund's balance should be determined after GMCW provides a detailed study on the costs of removing the turbines, all related infrastructure, and returning the Project's summit area, to the extent possible, to the pre-construction condition. Foley pf. at 10.

276. The Fund should be increased over time to account for inflation and should be bankruptcy-remote to protect it against creditor claims in the event the Project encounters financial difficulty. Zimmerman reb. pf. at 9; Foley pf. at 10.

277. The Fund should be independently managed. Foley pf. at 10.

278. GMCW will post a Letter of Credit or other appropriate financial security for the Fund prior to commencement of construction. Zimmerman reb. pf. at 9; Foley pf. at 10.

279. The Board should institute a decommissioning review when the Project fails to produce at least 65% of the projected output in any consecutive two-year period. Foley pf. at 10; *see* Exh. Petitioner-JH-1 at 4; Zimmerman pf. at 11-12; tr. 2/10/10 at 253-54 (Zimmerman).

Discussion

The purpose of the Fund is to ensure that there are sufficient funds available to return the Project site to an appropriate condition at the end of the Project's useful life or earlier, should the Project cease or reduce operations for any reason. The parties are not disputing the need for a Fund. However, since GMCW has not established the specifications for the Project, we are conditioning this CPG on the submission and approval, prior to construction, of GMCW's Plan and Fund.

GMCW agreed to submit, prior to construction, a Plan similar to those previously approved by the Board for commercial-scale wind generation projects, in collaboration with its chosen turbine supplier.[103] GMCW acknowledged that the Plan would establish a Fund that: (1) is backed by a Letter of Credit or another appropriate financial security; (2) increases over

103. Zimmerman reb. pf. at 9. *See* conditions set forth in two previously approved commercial-scale wind generation projects in Docket 7250, Order of 4/16/09 and Docket 7156, Order of 8/8/07.

time to account for inflation; and (3) is bankruptcy-remote to protect it from creditor claims in the event the Project encounters financial difficulties.[104] The Department recommends that the Fund be independently managed to insure that Vermonters are adequately protected when decommissioning is appropriate.[105] The Department also recommends that GMCW provide a detailed study on the costs of removing the turbines, all related infrastructure, and returning the Project's summit area, to the extent possible, to the pre-construction condition.[106] Further, the Department recommends that the production threshold should be set at 65% of the output projected by GMCW.

We generally adopt the conditions agreed to by GMCW and the recommendations of the Department. We require GMCW to file a Plan with the Board and parties for Board approval prior to commencement of construction. The Plan should include a detailed estimate of the projected decommissioning costs along with certification that the cost estimate was prepared by a person(s) with appropriate knowledge and experience in wind generation projects and cost estimating.[107] The cost estimate should be submitted to the Board for review and approval. Parties will have two weeks to file any comments. Also, the Plan may allow GMCW to contribute to the Fund as the construction process proceeds such that the funding level is commensurate with the costs of removing infrastructure in place. The amount of the Fund may not net out the projected salvage value of the infrastructure.[108] In addition, we require that the Plan include a copy of the Letter of Credit to be posted by GMCW to secure the full amount of

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104. Zimmerman reb. pf. at 8-9.

105. Foley pf. at 10.

106. Foley pf. at 10. GMCW agreed, upon decommissioning, to restore the Project site to pre-construction conditions to the extent practical. Zimmerman reb. pf. at 9.

107. Decommissioning should consist, at a minimum, of the following: (1) all turbines, including the blades, nacelles and towers, would be disassembled and transported off-site for reclamation and sale; (2) all of the transformers would also be transported off-site for reuse or reclamation; (3) the overhead power collection conductors and the power poles would be removed from the site; (4) all underground infrastructure at depths less than two feet below grade would be removed from the site; and (5) all underground infrastructure at depths greater than two feet below finished grade would be abandoned in place. Areas where subsurface components are removed would be filled, graded to match adjacent contours, and re-seeded, stabilized with an appropriate seed mix, and allowed to re-vegetate naturally. *See* Docket 7250, Order of 4/16/09 at 91.

108. *See* Docket 7250, Order of 4/16/09 at 91-92.

the Fund, and demonstrate that the Fund will be managed independently and be creditor- and bankruptcy-remote in the event of GMCW's insolvency or business failure. We further require that the Letter of Credit be issued by an A-rated financial institution and that it name the Vermont Public Service Board as the designated beneficiary. The Letter of Credit shall be an "irrevocable standby" letter of credit and shall include an auto-extension provision (i.e., "evergreen clause").

Similar to the approach we approved in the UPC Vermont Wind and Deerfield Wind dockets[109], we adopt the Department's recommendation that a trigger be set for decommissioning review. Therefore, if actual production falls below 65% of projected production during any consecutive two-year period, a decommissioning review will be initiated.[110] However, in the event that GMCW can show that it has entered into stably priced power contracts with Vermont utilities through which a substantial amount of power is to be sold to Vermont utilities at stable prices, we may reduce the decommissioning trigger to as low as 50% if we find that those contracts provide sufficient benefit to Vermont ratepayers. In any case, GMCW would have the opportunity to demonstrate during this review that there are reasons for the decline in production such that the Project should not be removed.

IX. POST-CERTIFICATION REVIEW

The Board typically requires that design-detail-level plans be filed for Board approval prior to construction. We continue this practice in this case. GMCW shall file design-detail plans with the parties and the Board for major project components, including access roads, collector lines, turbines, and the step-up substation. In addition, in this Order the Board is requiring GMCW to file other plans, including those involving bat and bird mortality studies, blasting, and operating protocols to reduce icing and bat mortality. Parties will have three weeks, from the date each set of plans are filed with the Board, to comment on the plans or request the opportunity for a hearing. If a party requests the opportunity for a hearing, it must

109. Docket 7156, Order of 8/8/07 at 116 and Docket 7250, Order of 4/16/09 at 95-96.

110. The 65% trigger for decommissioning review is also similar to that which we adopted in our consideration of the East Haven Windfarm. Docket No. 6911, Order of 7/17/06, at 85.

demonstrate why a hearing is necessary. We also caution parties that the post-certification process is not an opportunity to present additional arguments on issues decided in this Order.

X. CONCLUSION

For the reasons described above, we conclude that the Project, subject to the conditions listed below, will promote the general good, and a Certificate of Public Good shall be issued allowing its construction and operation.

XI. ORDER

IT IS HEREBY ORDERED, ADJUDGED AND DECREED by the Public Service Board ("Board") of the State of Vermont that the three- to five-wind turbine, 7.5 to 12 MW wind generation facility and related facilities to be located in the Towns of Georgia and Milton, Vermont (the "Project"), proposed by Georgia Mountain Community Wind, LLC ("GMCW"), will promote the public good of the State of Vermont and a certificate of public good shall be issued for the Project subject to the conditions below:

1. GMCW shall incorporate into the proposed Project design an appropriate set-back distance from adjacent property lines. The Board will conduct additional proceedings to determine an appropriate set-back distance from the turbines to the adjacent property lines.

2. GMCW shall enter into long-term stably priced power purchase agreement(s) with a Vermont utility or utilities for a substantial portion of the Project's output. GMCW shall file copies of such contracts with the Board and may not commence construction until the Board has determined that the contracts satisfy this condition. If an agreement between GMCW and the utilities cannot be reached after conducting negotiations in good faith, GMCW may file a statement with the Board explaining why it cannot reach an agreement and why the Board should modify or remove this requirement. GMCW must provide the Board and parties with an update of the status of negotiations with Vermont utilities 90 days after the date of this Order.

3. GMCW shall file for Board approval design-detail plans for major project components, including access roads, collector lines, turbines, and the step-up substation. Parties will have three weeks, from the date each set of plans is filed with the Board, to comment on the plans. GMCW cannot commence construction until the plan is approved.

4. When filing final design plans, GMCW shall identify how the design and construction of the Project will ensure that there will be no adverse impact to headwater resources. The Board's review of the final design plans will include consideration of how the project design and construction specifications avoid adverse impacts to headwater resources. In addition, GMCW must demonstrate that, to the extent possible, the transmission line and clearing zone are located within the pre-existing Vermont All-Terrain Vehicles Sportsman's Association, Inc. trail corridor. If GMCW cannot locate the transmission line and clearing zone within the corridor, it must explain why it cannot meet this requirement.

5. GMCW shall file a Transportation Plan for Board review and approval. The Transportation Plan shall incorporate: (a) provisions for emergency vehicle passage; (b) specific transportation plans with the Town of Milton officials, including scheduling for oversized loads; and (c) plans for employing sheriffs or other trained traffic-control personnel to manage traffic flow, as necessary, during the delivery of oversized loads. The Project shall not utilize North Road for access to the Project site. GMCW shall not exceed the turbine manufacturers' or the Milton Fire Department's limitations for road gradients. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence construction until the plan is approved.

6. GMCW shall obtain written confirmation from the Milton Fire Department that the Project area will be adequately served with fire-fighting coverage. GMCW cannot commence construction until it has provided this confirmation.

7. GMCW shall obtain all required highway crossing permits and oversized- and overweight-vehicle permits. GMCW cannot commence construction until it has received the necessary permits.

8. GMCW must gate access roads to the Project area and post signs to warn and discourage snowmobilers from entering dangerous areas.

9. GMCW shall file, for Board approval, an operating protocol that would shut down the turbines during icing conditions. Parties will have three weeks, from the date the operating protocol is filed with the Board, to comment on the operating protocol. GMCW cannot commence operations until the protocol is approved.

10. GMCW shall determine whether the Project requires alterations or upgrades to any public roads or other public facilities to accommodate the turbines chosen for the Project. If any improvements are required, GMCW shall obtain all necessary permits prior to construction and pay all costs associated with such improvements. GMCW cannot commence construction until it has made such a determination and received any necessary permits.

11. GMCW shall file a Decommissioning Plan (the "Plan") for Board approval. The Plan shall include a detailed estimate of the projected decommissioning costs along with certification that the cost estimate was prepared by a person(s) with appropriate knowledge and experience in wind generation projects and cost estimating. The Plan may allow GMCW to contribute to the Decommissioning Fund (the "Fund") as the construction process proceeds such that the funding level is commensurate with the costs of removing infrastructure in place. The amount of the Fund may not net out the projected salvage value of the infrastructure. The Plan shall include a copy of the Letter of Credit to be posted by GMCW to secure the full amount of the Fund, and demonstrate that the Fund will be managed independently and be creditor- and bankruptcy-remote in the event of GMCW's insolvency or business failure. The Letter of Credit shall be issued by an A-rated financial institution, shall name the Board as the designated beneficiary, and shall be an "irrevocable standby" letter that includes an auto-extension provision (i.e., "evergreen clause"). Parties will have three weeks, from the date this Plan is filed with the Board, to comment on the Plan. GMCW cannot commence construction until the Plan is approved.

12. GMCW shall file a blasting plan, similar to the one approved in Docket 7156 (Petition of UPC Wind), for Board approval. The blasting plan shall include the following conditions: (a) GMCW shall conduct a survey prior to any rock blasting utilizing a geotechnical engineering firm; (b) GMCW shall notify landowners within an appropriate radius of the Project in advance of any rock blasting; (c) GMCW shall limit blasting activities to between 9:00 AM and 5:00 PM Monday through Friday, and blasting activities shall not be permitted on state or federal holidays; (d) GMCW shall hire only licenced and certified blasting technicians, who shall be required to carry adequate insurance and meet all local, state, and national regulations and requirements, including those established by the Vermont Department of Public Safety; and (e) GMCW shall also require in its contracts that noise and air blast effects will be limited through

application of proper techniques and that blasting mats be used where needed to limit the occurrence of flyrock and dust migration. In addition, the blasting plan shall provide an explanation of why notification of residences within a half-mile radius of the Project is sufficient and identify on a map the residences that would receive such notice. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence construction until the plan is approved.

13. GMCW shall file a plan for Board approval identifying necessary actions to reduce dust from vehicle traffic and rock crushing during construction. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence construction until the plan is approved.

14. Construction activities shall only occur between 7:00 AM to 5:00 PM, Monday through Saturday and shall cease on Sundays and federal and state holidays.

15. To the extent that GMCW utilizes water for dust control, GMCW must truck in water from an appropriate off-site source.

16. During construction, GMCW shall employ appropriate soil erosion control measures to avoid short-term impacts to Wetland #22 and shall avoid adversely impacting the Wetland #34 area by: (1) utilizing timber swamp mats to create a sixteen-foot-wide access drive to each pole location; (2) utilizing large tire, all terrain style vehicles; (3) mulching any soil disturbances with weed-free straw immediately upon removal of the swamp mats; and (4) removing and disposing of any soils, displaced by pole holes, outside of the wetland area.

17. During construction, GMCW shall utilize swamp mats to avoid any adverse impacts from construction where the Project's transmission line crosses the ephemeral stream within Wetland #15.

18. GMCW shall retain all stormwater features associated with construction throughout the Project's life.

19. GMCW shall file, for Board approval, a plan that includes pre- and post-construction monitoring of residential wells within an appropriate radius of the Project. The plan must identify the measures that GMCW will take to remediate any damage to residential wells. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence construction until the plan is approved.

20. GMCW shall maintain the integrity of Ted Road during the construction and operation of the Project.

21. If hazardous materials are generated during the construction or operation of the project, GMCW shall store and dispose of any such materials in accordance with local and state hazardous waste laws and consider whether the Project requires an Environmental Protection Agency ("EPA") Small Quantity Hazardous Waste License.

22. GMCW shall construct and operate the Project so that it emits no prominent discrete tones pursuant to American National Standards Institute (ANSI) standards at the receptor locations; and Project-related sound levels at any existing surrounding residences do not exceed 45 dBA(exterior)(Leq)(1 hr) or 30 dBA (interior bedrooms)(Leq)(1 hr).

23. In the event noise from operation of the Project exceeds the maximum allowable levels, the Petitioner shall take all remedial steps necessary to bring the sound levels produced by the turbine(s) into compliance with allowable levels, including modification or cessation of turbine(s) operation.

24. GMCW shall submit, for Board approval, a noise monitoring plan to be implemented during the first full year of operation. The plan shall establish a monitoring program to confirm under a variety of seasonal and climatic conditions compliance with the maximum allowable sound levels described above. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence operations until the plan is approved.

25. GMCW shall file a proposal, for Board approval, for conserving the Project area as required in the section of this Order addressing rare and irreplaceable natural areas. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence construction until the plan is approved.

26. GMCW shall develop a monitoring and control plan for non-native invasive species, for Board approval. The plan shall cover a ten-year period, but should also be adaptable in terms of whether invasive species have been identified within a given time period following construction. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence construction until the plan is approved.

27. GMCW shall file, for Board approval, a plan to incorporate adjustments to the Project's operations to minimize bat fatalities. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence operations until the plan is approved.

28. GMCW shall file a plan, for Board approval, that studies the impact of the Project on bat mortality. The plan must include two years of bat fatality monitoring studies. GMCW shall also propose, for Board approval, a third-party with the necessary experience to conduct the study. GMCW must also grant the Vermont Agency of Natural Resources ("ANR") permission to access the Project area during the post-construction monitoring, hand over all bat carcasses to ANR for species verification and research, and prepare and make the results of post-construction monitoring studies available to ANR within 90 days of the end of data collection. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence operations until the plan is approved.

29. In order to monitor the effect of the Project on the small-footed bat, GMCW shall conduct three years of post-construction mortality studies, during the period June 1 through July 31. GMCW shall file a mortality study plan for Board approval, such plan should be consistent with the requirements of the general bat mortality plan. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence operations until the plan is approved.

30. GMCW shall file a proposed bird mortality plan for approval by the Board. The plan must include two years of post-construction bird mortality monitoring. Parties will have three weeks, from the date this plan is filed with the Board, to comment on the plan. GMCW cannot commence operations until the plan is approved.

31. After construction is complete, GMCW must reclaim and restore any Project areas that are disturbed during construction and are not required to remain in place for Project operations.

Dated at Montpelier, Vermont, this 11th day of June, 2010.

s/James Volz)
)
) PUBLIC SERVICE
)
s/David C. Coen) BOARD
)
) OF VERMONT
s/John D. Burke)

OFFICE OF THE CLERK

FILED: June 11, 2010

ATTEST: s/Susan M. Hudson
Clerk of the Board

NOTICE TO READERS: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Board (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: psb.clerk@state.vt.us)

Appeal of this decision to the Supreme Court of Vermont must be filed with the Clerk of the Board within thirty days. Appeal will not stay the effect of this Order, absent further Order by this Board or appropriate action by the Supreme Court of Vermont. Motions for reconsideration or stay, if any, must be filed with the Clerk of the Board within ten days of the date of this decision and order.

Attachment A – Appearances

James Porter, Esq.
for Vermont Department of Public Service

Kimberly K. Hayden, Esq.
Megan R. Ludwig, Esq.
Downs Rachlin Martin PLLC
for Georgia Mountain Community Wind, LLC

Judith Dillon, Esq.
David Englander, Esq.
Cielo Mendoza, Esq.
for Vermont Agency of Natural Resources

Joseph S. McLean, Esq.
Stitzel Page & Fletcher, PC
for Town of Georgia

Sanford Miller, Town Manager
Town of Milton

William F. Ellis, Esq.
McNeil, Leddy & Sheahan
for City of Burlington Electric Department

Greta Brunswick
Northwest Regional Planning Commission

George A. Wimble, *pro se*
Kenneth N. Wimble, *pro se*

Daniel and Tina FitzGerald, *pro se*

Kenneth and Virginia Mongeon, *pro se*

Kevin S. and Cynthia L. Cook, *pro se*

Jane and Heidi Fitzgerald, *pro se*

Matthew and Kimberly Parisi, *pro se*

Scott and Melodie McLane, *pro se*

Attachment B - Adjoining Landowners

Armand W. Turner, Jr.

James & Debra Pidgeon

Ronald & Judy McLaughlin

Daniel & Tina Fitzgerald

Jane & John Fitzgerald

Bernard Farnsworth

Kevin & Cynthia Cook

James Waters

Thomas & Wendy Shotwell

Horst & Jo Ellen Preylowski

Green Crow LLC

Gregory Mayville

Independent Towers of VT, LLC

David & Audrey Haselton

Kenneth & Virginia Mongeon

Reid & Regina Kilby

Paul & Jennifer Slingerland

Arlon & Caroline Cross

Terri Sabens

Michael & Terry Slingerland

Daniel Turner

Thomas & Kathy Hall

Douglas & Mary Turner

Vincent & Marianne Orest

John & Deborah Jorschick

Yancy Martell

Erwin, Loretta & Lee Devino

Sandra & Ira Turner

Glendon & Janice Bolio

Geoffrey Plunkett

Ty & Peggy Hardy

Steve Chicoine

Benjamin & Barbara Dow

Paul & Kathleen Favreau

Paul M. & Kathleen Favreau

Jeffrey Gratton & Pamela Boyer

Reginald Johnson

Cary Longley

Daniel & Angela Longley

Carmen Lowell

David Peake

Timothy & Diane Stanley

Kenneth & Robin Sweeney

Armand & Christine Turner

Susan Vaughan

Kevin & Mary McGrath

Lawrence & Judith Simon

George & Kenneth Wimble

Husky Injection Molding